ACTA COLL·MED·PHILAD·INSTIT·A·D·MDCCCLXXXVII
NON SIBI SED TOTI

Digitized by the Internet Archive
in 2013

http://archive.org/details/transactionsofco3518coll

TRANSACTIONS

OF THE

COLLEGE OF PHYSICIANS

OF PHILADELPHIA.

VOLUME THE TWELFTH.

TRANSACTIONS

OF THE

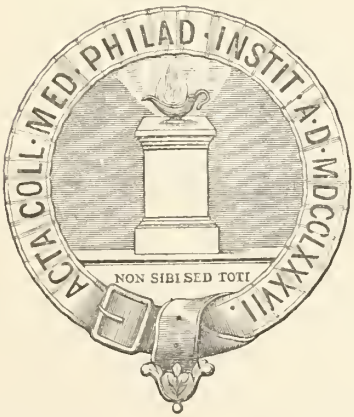
COLLEGE OF PHYSICIANS

OF

PHILADELPHIA.

THIRD SERIES.

VOLUME THE FIFTH.



PHILADELPHIA:
PRINTED FOR THE COLLEGE,
AND FOR SALE BY LINDSAY & BLAKISTON,
1881.

Entered according to Act of Congress, in the year 1881, by
THE COLLEGE OF PHYSICIANS OF PHILADELPHIA,
in the Office of the Librarian of Congress, at Washington.

PHILADELPHIA:
COLLINS, PRINTER,
705 Jayne Street.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

1881.

OFFICERS AND STANDING COMMITTEES.

PRESIDENT.
W. S. W. RUSCHENBERGER, M.D.

VICE-PRESIDENT.
ALFRED STILLÉ, M.D., LL.D.

SECRETARY.
RICHARD A. CLEEMANN, M.D.

TREASURER.
CHARLES STEWART WURTS, M.D.

CENSORS.
LEWIS RODMAN, M.D.,
EDWARD HARTSHORNE, M.D.,
WILLIAM GOODELL, M.D.,
SAMUEL LEWIS, M.D.

COUNCILLORS.
S. LITTELL, M.D.,
CASPAR MORRIS, M.D.,
JAMES H. HUTCHINSON, M.D.,
WILLIAM S. FORBES, M.D.,
JOHN H. BRINTON, M.D.,
—— —— M.D.

(The above named form the Council.)

CURATOR.
THOMAS HEWSON BACHE, M.D.

LIBRARIAN.
FRANK WOODBURY, M.D.

RECORDER.
J. EWING MEARS, M.D.

COMMITTEE OF PUBLICATION.
J. M. DA COSTA, M.D.,
JOHN ASHHURST, Jr., M.D.,
JAMES H. HUTCHINSON, M.D.

LIBRARY COMMITTEE.
ALFRED STILLÉ, M.D., LL.D.,
WALTER F. ATLEE, M.D.,
JOHN ASHHURST, Jr., M.D.,
I. MINIS HAYS, M.D.,
SAMUEL LEWIS, M.D.

COMMITTEE ON THE MÜTTER MUSEUM.
WILLIAM HUNT, M.D.,
S. WEIR MITCHELL, M.D.,
JOHN H. BRINTON, M.D.

HALL COMMITTEE.
EDWARD HARTSHORNE, M.D.,
LEWIS RODMAN, M.D.,
CASPAR MORRIS, M.D.,
T. HEWSON BACHE, M.D.,
ROBERT P. HARRIS, M.D.

COMMITTEE ON LECTURES.
S. D. GROSS, M.D., LL.D., D.C.L. OXON., LL.D. CANTAB.,
JOSEPH LEIDY, M.D., LL.D.,
WILLIAM GOODELL, M.D.,
WILLIAM F. NORRIS, M.D.,
JOHN H. PACKARD, M.D.

LIST

OF THE

PRESIDENTS OF THE COLLEGE FROM THE TIME OF ITS INSTITUTION.

ELECTED

1787. JOHN REDMAN, M.D.
1805. WILLIAM SHIPPEN, M.D.
1809. ADAM KUHN, M.D.
1818. THOMAS PARKE, M.D.
1835. THOMAS C. JAMES, M.D.*
1835. THOMAS T. HEWSON, M.D.
1848. GEORGE B. WOOD, M.D., LL.D.
1879. W. S. W. RUSCHENBERGER, M.D.

* Died four months after his election.

FELLOWS

OF THE

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

JULY, 1881.

[Non-Resident Fellows are marked thus (*).]

ELECTED

1870. ADLER, JOHN M., M.D.

1859. AGNEW, D. HAYES, M.D., LL.D., Professor of Surgery in the University of Pennsylvania, Surgeon to the Pennsylvania Hospital, Consulting Surgeon to the Orthopædic Hospital and to St. Christopher's Hospital, and to the Philadelphia and Northern Dispensaries.

1876. ALISON, ROBERT H., M.D., Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases.

1867. ALLEN, HARRISON, M.D., Professor of Physiology in the University of Pennsylvania, Consulting Surgeon to the Mission Hospital.

1873. ALLIS, OSCAR H., M.D., Surgeon to the Presbyterian Hospital and to the Howard Hospital.

1869. ANDREWS, T. HOLLINGSWORTH, M.D., Surgeon to the Howard Hospital, Consulting Surgeon to the Hospital of the Good Shepherd, Radnor.

1872. ASHBRIDGE, WILLIAM, M.D., Surgeon to the German Hospital, Surgeon for Out-patients to the Pennsylvania Hospital.

1863. ASHHURST, JOHN, Jr., M.D., Professor of Clinical Surgery in the University of Pennsylvania, Surgeon to the Children's Hospital, Consulting Surgeon to St. Christopher's Hospital and to the Hospital of the Good Shepherd, Radnor.

ELECTED

1865. Ashhurst, Samuel, M.D.

1835. Ashmead, William, M.D.

1857. Atlee, Walter F., M.D., Consulting Physician and Surgeon to St. Luke's Hospital, Bethlehem.

1852. Bache, Thomas Hewson, M.D.

1879. Baker, Washington H., M.D., Obstetrician to the State Hospital for Women and Infants, Assistant Physician to the Philadelphia Lying-in Charity and to St. Christopher's Hospital, Assistant Surgeon to the Orthopædic Hospital, Physician to the Philadelphia Dispensary, etc.

1876. Baldwin, Louis K., M.D., Examining Physician to the Hospital of the Good Shepherd, Radnor.

1880. Bartholow, Roberts, M.D., Professor of Materia Medica and General Therapeutics in the Jefferson Medical College.

1873. Baxter, H. F., M.D.

1874. Beecher, A. C. W., M.D.

1860. Benner, Henry D., M.D.

1874. Bennett, W. H., M.D., Physician to the Episcopal Hospital and to St. Christopher's Hospital.

1871. Bertolet, R. M., M.D.

*1866. Black, J. J., M.D.

*1867. Boardman, Charles H., M.D.

1859. Boker, Charles S., M.D., Surgeon to St. Joseph's Hospital.

1842. Bridges, Robert, M.D., Emeritus Professor of Chemistry in the Philadelphia College of Pharmacy.

1856. Brinton, John H., M.D., Lecturer on Operative Surgery in the Jefferson Medical College, and Surgeon to the Hospital of the same, Surgeon to the Philadelphia Hospital and to St. Joseph's Hospital.

1878. Bruen, Edward T., M.D., Lecturer on Urinary Pathology and Demonstrator of Clinical Medicine in the University of Pennsylvania, Physician to the Philadelphia Hospital. Examining Physician to the Hospital of the Good Shepherd, Radnor.

ELECTED

1879. Buck, W. Penn, M.D.

*1851. Bullock, William R., M.D.

1870. Burnett, C. H., M.D., Aurist to the Presbyterian Hospital, Surgeon to the Philadelphia Infirmary for Diseases of the Ear.

1875. Burns, Robert, M.D.

1863. Burpee, David, M.D., Physician to the Howard Hospital.

1880. Chapman, Henry C., M.D., Professor of the Institutes of Medicine and of Medical Jurisprudence in the Jefferson Medical College.

1868. Cheston, D. Murray, M.D., Physician to the Children's Hospital.

1873. Clark, Leonardo S., M.D.

1872. Cleemann, Richard A., M.D.

*1842. Clymer, Meredith, M.D.

1827. Coates, Benjamin Hornor, M.D.

1871. Cohen, J. Solis, M.D., Lecturer on Laryngoscopy and Diseases of the Throat in the Jefferson Medical College, and Physician to the Hospital of the same, Physician to the German Hospital.

*1870. Corbit, William B., M.D.

*1857. Corse, James M., M.D.

1866. Cruice, R. B., M.D., Surgeon to St. Joseph's Hospital.

1873. Cruice, W. R., M.D.

1868 Cummiskey, James, M.D.

1858. Da Costa, J. M., M.D., Professor of the Principles and Practice of Medicine in the Jefferson Medical College, Physician to the Pennsylvania Hospital, Consulting Physician to the Children's Hospital, to the Northern Dispensary, and to the Pennsylvania Free Dispensary for Skin Diseases.

1859. Darrach, James, M.D., Consulting Surgeon to the Germantown Hospital.

1874. Deakyne, A. C., M.D.

ELECTED

*1870. Deal, L. J., M.D.

1864. Downs, R. N., M.D., Consulting Physician to the Germantown Hospital.

1864. Duer, E. L., M.D., Accoucheur to the Philadelphia Hospital, Surgeon to the State Hospital for Women and Infants, Visiting Physician to the Preston Retreat.

1871. Duhring, L. A., M.D., Clinical Professor of Skin Diseases in the Hospital of the University of Pennsylvania, Physician to the Dispensary for Skin Diseases.

1881. Dulles, Charles Winslow, M.D., Surgical Registrar to the Hospital of the University of Pennsylvania, Surgeon for Out-patients to the Presbyterian Hospital.

1863. Dunglison, Richard J., M.D.

*1871. Dunglison, Thomas R., M.D.

*1849. Dunott, Justus, M.D.

1860. Dunton, William R., M.D., Consulting Physician to the Germantown Hospital.

1880. Eskridge, J. T., M.D.

1868. Evans, H. Y., M.D., Physician to the Charity Hospital.

1872. Finn, W. H., M.D., Surgeon to St. Christopher's Hospital.

1866. Fischer, Emil, M.D.

1862. Forbes, William S., M.D., Demonstrator of Anatomy in the Jefferson Medical College, Surgeon to the Episcopal Hospital.

1870. Ford, W. H., M.D.

1831. Fox, George, M.D.

1864. Fricke, Albert, M.D.

1870. Gardette, E. B., M.D.

*1873. Gerhard, George S., M.D.

1864. Getchell, F. H., M.D., Gynæcologist to the Hospital of the Jefferson Medical College, Obstetric Physician to the Catharine Street Dispensary.

*1846. Gibbons, Henry, M.D.

ELECTED

*1848. GIVEN, ROBERT A., M.D.

*1854. GOBRECHT, WILLIAM H., M.D.

1868. GOODELL, WILLIAM, M.D., Professor of Clinical Gynæcology in the University of Pennsylvania, Physician in Charge of the Preston Retreat, Consulting Physician to the Lying-in Department of the Northern Dispensary.

1867. GOODMAN, H. EARNEST, M.D., Professor of Principles of Surgery and Clinical Surgery in the Medico-Chirurgical College of Philadelphia, Surgeon to Wills Hospital and to the Orthopædic Hospital, Consulting Surgeon to the State Hospital for Women and Infants.

1864. GRANGER, WILLIAM H., M.D.

1857. GREEN, ALFRED, M.D.

1870. GRIER, M. J., M.D.

1842. GRISCOM, JOHN D., M.D.

1857. GROSS, SAMUEL D., M.D., LL.D., D.C.L. Oxon., LL.D. Cantab., Professor of the Principles and Practice of Surgery in the Jefferson Medical College, Consulting Surgeon to the Orthopædic Hospital.

1868. GROSS, SAMUEL W., M.D., Lecturer on Diseases of the Urino-Genital Organs in the Jefferson Medical College and Surgeon to the Hospital of the same, Surgeon to the Philadelphia Hospital, Consulting Surgeon to the Northern Dispensary and to the Pennsylvania Free Dispensary for Skin Diseases.

1871. GROVE, JOHN H., M.D., Surgeon to St. Mary's Hospital.

1863. HALL, A. DOUGLASS, M.D., Surgeon to Wills Hospital.

1865. HAMILTON, GEORGE, M.D.

*1859. HAMMOND, WILLIAM A., M.D.

1881. HAND, FRANK C., M.D.

1865. HARLAN, GEORGE C., M.D., Surgeon to Wills Hospital, Ophthalmic and Aural Surgeon to the Pennsylvania Hospital.

1863. HARLOW, LEWIS D., M.D.

1862. HARRIS, ROBERT P., M.D., Physician to the Franklin Reformatory Home.

ELECTED

1847. HARTSHORNE, EDWARD, M.D.

*1851. HARTSHORNE, HENRY, M.D.

1868 HASSLER, FERDINAND A., M.D.

*1849. HASTINGS, JOHN, M.D.

1855. HATFIELD, NATHAN L., M.D., Consulting Physician to the Northern Dispensary.

*1865. HAYES, ISAAC I., M.D.

1872. HAYS, I. MINIS, M.D.

1878. HESS, ROBERT J., M.D.

1853. HEWSON, ADDINELL, M.D.

1872. HINKLE, A. G. B., M.D.

1852. HOOPER, WILLIAM H., M.D.

1879. HOPKINS, WILLIAM BARTON, M.D., Assistant Surgeon to the Episcopal Hospital.

1867. HORN, GEORGE H., M.D.

1868. HOWELL, SAMUEL B., M.D., Professor of Mineralogy and Geology in the University of Pennsylvania.

1881. HUIDEKOPER, RUSH SHIPPEN, M.D.

1854. HUNT, WILLIAM, M.D., Surgeon to the Pennsylvania Hospital and to the Orthopædic Hospital.

1871. HUNTER, CHARLES T., M.D., Demonstrator of Anatomy in the University of Pennsylvania, Surgeon to the Episcopal Hospital and Surgeon for Out-patients to the Pennsylvania Hospital.

1863. HUTCHINSON, JAMES H., M.D., Physician to the Pennsylvania Hospital and to the Children's Hospital.

1871. INGHAM, JAMES V., M.D., Obstetrician to the State Hospital for Women and Infants.

1871. JENKS, WILLIAM F., M.D., Surgeon to the State Hospital for Women and Infants, Consulting Physician to the Lying-in Department of the Northern Dispensary.

1864. JONES, S. P., M.D., Assistant Physician to the Pennsylvania Hospital for the Insane.

1867. JUDSON, OLIVER A., M.D.

ELECTED

1877. KEATING, JOHN M., M.D., Lecturer on Diseases of Children in the University of Pennsylvania, Obstetrician to the Philadelphia Hospital, Physician to St. Joseph's Hospital.

1849. KEATING, WILLIAM V., M.D., Physician to St. Joseph's Hospital.

1867. KEEN, WILLIAM W., M.D., Surgeon to St. Mary's Hospital, Consulting Surgeon to the Mission Hospital, and to the Philadelphia Home for Incurables.

1852. KENNEDY, ALFRED L., M.D.

*1844. KING, CHARLES R., M.D.

1864. KING, WILLIAM M., M.D., U.S.N.

1875. KIRKBRIDE, J. J., M.D., Physician for Out-patients to the Pennsylvania Hospital.

1839. KIRKBRIDE, THOMAS S., M.D., LL.D., Physician-in-Chief to the Pennsylvania Hospital for the Insane.

1848. KLAPP, JOSEPH, M.D., Physician to the Howard Hospital.

*1865. LAROCHE, C. PERCY, M.D.

1864. LEEDOM, JOHN M., M.D.

1851. LEIDY, JOSEPH, M.D., LL.D., Professor of Anatomy in the University of Pennsylvania.

1877. LEWIS, MORRIS J., M.D., Physician to the Episcopal Hospital, Assistant Physician to the Children's Hospital, and to the Orthopædic Hospital and Infirmary for Nervous Diseases.

1855. LEWIS, FRANCIS W., M.D.

1849. LEWIS, SAMUEL, M.D.

1836. LITTELL, S., M.D., Consulting Surgeon to the Philadelphia Dispensary, Emeritus Surgeon to Wills Hospital.

1877. LONGSTRETH, MORRIS, M.D., Lecturer on Pathological Anatomy in the Jefferson Medical College, Physician, and Pathologist and Curator, to the Pennsylvania Hospital.

1849. LUDLOW, JOHN L., M.D., Physician to the Philadelphia Hospital and to the Presbyterian Hospital.

ELECTED

1875. McClellan, George, M.D., Surgeon to the Philadelphia Hospital.

1871. McFerran, J. A., M.D., Physician to the Gynæcological Hospital and Infirmary for Diseases of Children.

*1850. Mayer, Edward H., M.D.

1868. Mears, J. Ewing, M.D., Demonstrator of Surgery in the Jefferson Medical College and Gynæcologist to the Hospital of the same, Surgeon to St. Mary's Hospital.

1875. Meigs, Arthur V., M.D., Assistant Physician to the Children's Hospital, Physician for Out-patients to the Pennsylvania Hospital.

1843. Meigs, John Forsyth, M.D., Physician to the Pennsylvania Hospital, Consulting Physician to the Children's Hospital.

1881. Mills, Charles K., M.D., Lecturer on Mental Diseases and Electro-Therapeutics in the University of Pennsylvania, Neurologist to the Philadelphia Hospital.

1856. Mitchell, S. Weir, M.D., Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases, Consulting Physician to the State Hospital for Women and Infants.

1842. Moehring, Gotthilf, M.D.

1863. Morehouse, George R., M.D., Physician to St. Joseph's Hospital.

1839. Morris, Caspar, M.D.

1856. Morris, J. Cheston, M.D., Consulting Physician to the Mission Hospital.

1861. Morton, Thomas G., M.D., Surgeon to the Pennsylvania Hospital and to the Orthopædic Hospital, Consulting Surgeon to the Jewish Hospital, Emeritus Surgeon to Wills Hospital.

1864. Moss, William, M.D.

1865. Nebinger, Andrew, M.D., Physician to St. Mary's Hospital.

1869. Norris, Herbert, M.D., Physician to the Catharine Street Dispensary.

ELECTED

1865. NORRIS, ISAAC, Jr., M.D

1870. NORRIS, JOHN C., M.D.

1866. NORRIS, WILLIAM F., M.D., Clinical Professor of Diseases of the Eye in the Hospital of the University of Pennsylvania, Surgeon to Wills Hospital.

1858. PACKARD, JOHN H., M.D., Surgeon to the Episcopal Hospital and to St. Joseph's Hospital.

1835. PANCOAST, JOSEPH, M.D., Emeritus Professor of General, Descriptive, and Surgical Anatomy in the Jefferson Medical College.

1864. PANCOAST, WILLIAM H., M.D., Professor of General, Descriptive, and Surgical Anatomy in the Jefferson Medical College, Surgeon to the Philadelphia Hospital, Consulting Surgeon to the Charity Hospital and to the Pennsylvania Free Dispensary for Skin Diseases.

*1854. PARRISH, JOSEPH, M.D.

1854. PENROSE, R. A. F., M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children in the University of Pennsylvania, Consulting Obstetrician to the State Hospital for Women and Infants, Visiting Physician to the Preston Retreat.

1868. PEPPER, WILLIAM, M.D., LL.D., Professor of Clinical Medicine in the University of Pennsylvania, Physician to the Philadelphia Hospital and to the Children's Hospital, Consulting Physician to the Mission Hospital.

1872. PORTER, WILLIAM G., M.D., Surgeon to the Presbyterian Hospital and to the Philadelphia Hospital.

1866. REED, THOMAS B., M.D., Surgeon to the Presbyterian Hospital, Microscopist to the Philadelphia Hospital.

1842. REESE, JOHN J., M.D., Professor of Medical Jurisprudence in the University of Pennsylvania, Physician to St. Joseph's Hospital, and to the Gynæcological Hospital and Infirmary for Diseases of Children.

1853. RHOADS, JAMES E., M.D.

ELECTED

1871. RICHARDSON, ELLIOT, M.D., Lecturer on Practical Obstetrics in the University of Pennsylvania, Surgeon for Out-patients to the Pennsylvania Hospital, Obstetric Physician to the Philadelphia Dispensary, Physician to the Catharine Street Dispensary.

1869. RICHARDSON, JOSEPH G., M.D., Professor of Hygiène and Demonstrator of Histology in the University of Pennsylvania, Physician to the Presbyterian Hospital, Physician for Out-patients and Microscopist to the Pennsylvania Hospital.

*1857. RICHARDSON, TOBIAS G., M.D.

1867. ROBERTS, JACOB, M.D.

1878. ROBERTS, JOHN B., M.D., Lecturer on Anatomy in the Philadelphia School of Anatomy and Operative Surgery.

1843. RODMAN, LEWIS, M.D., Visiting Physician to the Preston Retreat.

1857. ROGERS, ROBERT E., M.D., Professor of Chemistry in the Jefferson Medical College.

1838. RUSCHENBERGER, W. S. W., M.D., U. S. N.

*1852. SARGENT, FITZ WILLIAM, M.D.

*1864. SARGENT, WINTHROP, M.D.

1866. SCHAFFER, CHARLES, M.D.

1870. SCHELL, HENRY S., M.D., Surgeon to Wills Hospital, Ophthalmic and Aural Surgeon to the Children's Hospital.

1875. SEYFERT, THEODORE H., M.D., Physician to the Gynæcological Hospital and Infirmary for Diseases of Children.

1877. SHAKESPEARE, EDWARD O., M.D., Lecturer on Refraction and Accommodation of the Eye, and on Operative Ophthalmic Surgery, in the University of Pennsylvania, Pathologist and Ophthalmologist to the Philadelphia Hospital.

1868. SHAPLEIGH, E. B., M.D.

1876. SHIPPEN, EDWARD, M.D., U. S. N.

1870. SILLIMAN, HENRY R., M.D.

1880. SIMES, J. H. C., M.D., Lecturer on Histology and Demonstrator of Pathological Histology in the University of Pennsylvania, Assistant Surgeon to the Episcopal Hospital.

ELECTED

1873. SIMPSON, JAMES, M.D., Physican to St. Mary's Hospital.

1872. SINKLER, WHARTON, M.D., Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases.

1857. SLOCUM, ALFRED M., M.D.

1863. SMITH, ALBERT H., M.D., Physician to and Lecturer on Obstetrics in the Philadelphia Lying-in Charity, Visiting Physician to the Preston Retreat, Consulting Physician to the Hospital of the Good Shepherd, Radnor.

1863. SMITH, A. K., M.D., U. S. A.

1864. SMITH, EDWARD A., M.D.

*1856. SMITH, R. K., M.D.

1864. SPOONER, EDWARD A., M.D.

1875. STARR, LOUIS, M.D., Lecturer on General Symptomatology in the University of Pennsylvania, Physician to the Episcopal Hospital and Assistant Physician to the Children's Hospital.

1842. STILLÉ, ALFRED, M.D., LL.D., Professor of the Theory and Practice of Medicine in the University of Pennsylvania, Consulting Physician to the State Hospital for Women and Infants.

1846. STOCKER, ANTHONY E., M.D.

1871. STRAWBRIDGE, GEORGE, M.D., Clinical Professor of Diseases of the Ear in the Hospital of the University of Pennsylvania, Surgeon to Wills Hospital, Ophthalmic Surgeon to the Presbyterian Hospital, Surgeon to the Eye and Ear Department of the Philadelphia Dispensary.

1855. STROUD, WILLIAM D., M.D.

1867. TAYLOR, R. R., M.D.

1867. THOMAS, CHARLES H., M.D.

1869. THOMSON, WILLIAM, M.D., Professor of Ophthalmology in the Jefferson Medical College, Emeritus Surgeon to Wills Hospital.

*1853. TILDEN, W. P., M.D.

1870. TURNER, A. PAUL, M.D.

ELECTED

1866. TYSON, JAMES, M.D., Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, Physician to the Philadelphia Hospital.

*1852. TYSON, JAMES L., M.D.

1864. VANDYKE, E. B., M.D.

1873. VAN HARLINGEN, ARTHUR, M.D., Consulting Physician to the Dispensary for Skin Diseases

1852. WALLACE, ELLERSLIE, M.D., Professor of Obstetrics and Diseases of Women and Children in the Jefferson Medical College, Consulting Obstetrician to the State Hospital for Women and Infants, Visiting Physician to the Preston Retreat, Consulting Physician to the Lying-in Department of the Northern Dispensary.

1873. WALLACE, W. H., M.D.

*1839. WARRINGTON, JOSEPH, M.D.

1875. WEBB, WILLIAM H., M.D.

1863. WELLS, W. LEHMAN, M.D.

1878. WHITE, J. WILLIAM, M.D., Demonstrator of Surgery and Lecturer on Venereal Diseases in the University of Pennsylvania, Surgeon to the Philadelphia Hospital.

1880. WILLARD, DEFOREST, M.D., Lecturer on Orthopædic Surgery in the University of Pennsylvania, Surgeon to the Presbyterian Hospital.

1868. WILLIAMS, HORACE, M.D., Obstetrician to the State Hospital for Women and Infants, Obstetric Physician to the Philadelphia Dispensary, Physician to the Howard Hospital.

1878. WILLIAMSON, JESSE, M.D., Surgeon to the Howard Hospital.

1851. WILSON, ELLWOOD, M.D., Consulting Physician to the Philadelphia Lying-in Charity, Visiting Physician to the Preston Retreat.

1874. WILSON, J. C., M.D., Lecturer on Physical Diagnosis in the Jefferson Medical College and Physician to the Hospital of the same, Physician to the Philadelphia Hospital.

ELECTED

1871. WISTAR, THOMAS, M.D.

1848. WISTER, CASPAR, M.D., Consulting Physician to the Philadelphia Dispensary.

1852. WISTER, OWEN JONES, M.D., Consulting Surgeon to the Germantown Hospital.

1865. WOOD, HORATIO C., M.D., Professor of Materia Medica, Pharmacy and General Therapeutics in the University of Pennsylvania and Clinical Professor of Diseases of the Nervous System in the Hospital of the same, Physician to the Philadelphia Hospital.

1880. WOODBURY, FRANK, M.D., Physician to the German Hospital.

1866. WOODS, D. F., M.D., Physician to the Presbyterian Hospital.

1878. WORMLEY, THEODORE G., M.D., LL.D., Professor of Chemistry in the University of Pennsylvania.

1860. WURTS, CHARLES STEWART, M.D.

1861. YARROW, THOMAS J., M.D.

*1840. ZANTZINGER, WILLIAM S., M.D.

[It is particularly requested that any change of appointment, etc., may be communicated to the Committee of Publication before the first of July, in each year, in order that the List may be made as correct as possible.]

CORRESPONDING FELLOWS.

ELECTED

1880. CARROW, FLEMMING, M.D., Canton, China.

1880. CHIARA, DOMENICO, Milan, Italy.

1881. COURTY, AMÉDÉE, Montpellier, France.

1880. WASSEIGE, ADOLPHE, Liège, Belgium.

ASSOCIATES.

[Limited to Fifty, of whom Twenty may be Foreigners.]

ELECTED

1873. ACLAND, HENRY W., M.D., F.R.S., Oxford, England.

1869. ALVARENGA, P. F. DA COSTA, Lisbon, Portugal.

1847. ATLEE, JOHN L., M.D., LL.D., Lancaster, Pennsylvania

1876. BALDWIN, W. O., M.D., Montgomery, Alabama.

1877. BARNES, ROBERT, M.D., London, England.

1876. BARKER, FORDYCE, M.D., New York.

1876. BIGELOW, HENRY J., M.D., Boston, Massachusetts.

1876. BILLINGS, JOHN S., M.D., U. S. A., Washington, District of Columbia.

1876. BOWDITCH, HENRY I., M.D., Boston, Massachusetts.

1865. BUTCHER, R. G. H., M.D., Dublin, Ireland.

1877. BYFORD, WILLIAM H., M.D., Chicago, Illinois.

1877. CHAILLÉ, STANFORD E., M.D., New Orleans, Louisiana.

1848. CHRISTISON, SIR ROBERT, Bart., M.D., D.C.L., LL.D., Edinburgh, Scotland.

1876. CLARK, ALONZO, M.D., New York.

1876. COMEGYS, C. G., M.D., Cincinnati, Ohio.

1876. CORSON, HIRAM, M.D., Norristown, Pennsylvania.

1876. DAVIS, N. S., M.D., Chicago, Illinois.

1876. DONALDSON, F., M.D., Baltimore, Maryland.

1868. FLINT, AUSTIN, M.D., LL.D., New York.

1878. FOTHERGILL, J. MILNER, M.D., London, England.

1876. GREEN, TRAILL, M.D., Easton, Pennsylvania.

ELECTED

1852. Hall, Archibald, M.D., Canada.

1868 Hamilton, Frank H., M.D., LL.D., New York.

1876. Hodgen, John T., M.D., St. Louis, Missouri.

1874. Jackson, J. Hughlings, M.D., London, England.

1876. Johnson, George, M D., F.R.S., London, England.

1876. Johnston, Christopher, M D., Baltimore, Maryland.

1876. Jones, Joseph, M.D., New Orleans, Louisiana.

1876. Kinloch, R A., M.D., Charleston, South Carolina.

1876. King, James, M.D., Pittsburgh, Pennsylvania.

1877. Lister, Joseph, LL.D., F R S., London, England.

1865. Macleod, G. H. B., M.D., Glasgow, Scotland.

1876. Moore, E. M., M.D., Rochester, New York.

1876. Mowry, R. B , M.D., Allegheny City, Pennsylvania.

1873. Ogle, John W., M.D., London, England.

1874. Paget, Sir James, Bart., D.C.L., LL.D., F.R.S., London, England.

1842. Parker, Peter, M.D., Washington, District of Columbia.

1876. Parker, Willard, M.D., New York.

1873. Peacock, Thomas B., M.D., London, England.

1876. Pollock, A. M., M.D., Pittsburgh, Pennsylvania.

1876. Porcher, F. Peyre, M.D., Charleston, South Carolina.

1869. Valcourt, Th. de, Cannes, France.

1857. Valery, Gaetano, Florence, Italy.

1861. Velasco, Pedro Gonzales, Madrid, Spain.

1860. Walther, Hermann, Dresden, Saxony.

CONTENTS.

PAGE

List of Officers and Standing Committees iii
List of Presidents of the College iv
List of Fellows of the College v
List of Corresponding Fellows of the College xviii
List of Associates of the College xix
List of Illustrations xxiii
Notice xxiv

Memoir of Dr. George B. Wood xxv
Memoir of Dr. Isaac Hays lxxvii
Memoir of Dr. John Marshall Paul cxi
Memoir of Dr. James Aitken Meigs cxvii
Memoir of Dr. Thaddeus L. Leavitt cxxxv
Memoir of Dr. John Neill cxli
Memoir of Dr. Isaac Ray clvii

I. Foot-Binding in China. An Account of the Process and its Effects; and a Correction of many Erroneous Statements which have been made, chiefly by Travellers, in regard to it. By Robert P. Harris, A.M., M.D. 1

II. Account of a Case in which Heart-clot occurred as a Consequence of Uræmic Convulsion and Tumors in the Heart. By Arthur V. Meigs, M.D., Physician for Out-patients to the Pennsylvania Hospital, Assistant Physician to the Children's Hospital, etc. 19

Remarks upon the Preceding Paper. By John B. Roberts, M.D. 27

III. Report of the Committee on Meteorology and Epidemics for the year 1878. By Richard A. Cleemann, M.D., Physician to St. Mary's Hospital, and Member of the Board of Health of Philadelphia 29

PAGE

IV. Case of General Hyperostosis. By JAMES H. HUTCHINSON, M.D., One of the Attending Physicians to the Pennsylvania Hospital, etc. 49

V. Cases of Starvation Fever. By J. M. DA COSTA, M.D., Professor of the Practice of Medicine in the Jefferson Medical College, Physician to the Pennsylvania Hospital, etc. . . 57

VI. Foot-Binding in Ningpo, China. By ROBERT P. HARRIS, A.M., M.D. 63

VII. Report of a Case of Diabetes Mellitus in which Double Cataract existed; Death occurring three days subsequent to an Operation of Extraction. By J. EWING MEARS, M.D., Surgeon to St. Mary's Hospital, etc. 67

VIII. Report of the Committee on Meteorology and Epidemics for the year 1879. By RICHARD A. CLEEMANN, M.D., Member of the Board of Health of Philadelphia 79

IX. Thoughts upon Vivisection, with reference to its Restriction by Legislative Action. By GEORGE HAMILTON, M.D. . . 103

Remarks upon the Preceding Paper. By J. C. MORRIS, M.D. 121

INDEX 123

LIST OF ILLUSTRATIONS.

PHOTOTYPES.

PAGE

I. Front View of Patient affected with General Hyperostosis. (Dr. J. H. Hutchinson.) 50

II. Back View of the same Patient. (Dr. J. H. Hutchinson.) . 51

WOOD-CUTS, ETC.

Foot-Binding in China. Figs. 1–3. (Dr. R. P. Harris.) . 10–11

Tumors of the Heart. Figs. 1 and 2. (Dr. A. V. Meigs.) . 21–22

Cyrtometric Tracing from Patient affected with General Hyperostosis. (Dr. J. H. Hutchinson.) 52

NOTICE.

The present volume of Transactions contains the papers read before the College from August, 1879, to July, 1881, inclusive.

The Committee of Publication thinks it proper to say that the College holds itself in no way responsible for the statements, reasonings, or opinions set forth in the various papers published in its Transactions.

[Volumes I.–V. of the Third Series of the Transactions have been edited by Dr. John Ashhurst, Jr.]

MEMOIR

OF

GEORGE B. WOOD, M.D., LL.D.,

LATE PRESIDENT OF THE COLLEGE.

By

S. LITTELL, M.D.

[Read October 1, 1879.]

"The Sun sets at night, and the Stars shun the day,
But glory remains when their light fades away."

Mr. President,

I accepted with great diffidence your appointment to prepare for the College a memoir of its late President. He was no ordinary man. Like the future king of Israel, he was pre-eminent among his brethren. Few of them have attained to the height of his moral and intellectual stature; and fewer still have equalled him in the variety and extent of his professional knowledge and achievements. His long, useful and laborious life is a bright example, and contains much of encouragement and instruction. It was this lofty excellence that made me hesitate. I feared that the subject would be injured by my feeble treatment; I knew that I could not even realize my own ideal; and I should have been pleased if choice had been made of a Fellow more competent to do it justice. But since it has been otherwise ordered, I address myself with loving heart, though weak endeavor, to the performance of the grateful duty which you have enjoined.

George Bacon Wood, the eldest[1] son of Richard Wood and Elizabeth Bacon, was born at Greenwich, Cumberland County, New Jersey, on the 13th of March, 1797. James Wood, the first of the name of whom there is any mention, emigrated from Bristol, England, to Philadelphia, in the beginning of the eighteenth century; and his two sons settled on Snow Creek, near Greenwich. They were members of the Society of Friends, as were so many of the emigrants to this part of the country, in those early days. One of them, Richard Wood, the great grandfather of Dr. Wood, became a judge of the county in 1748; and the family appears to have always had some prominence there. Dr. Wood's father was an extensive land owner and cultivator; but all his children, of whom there were five—four sons and one daughter—subsequently removed to Philadelphia. George Bacon received the rudiments of his education in the city of New York, where he remained several years; completing his studies, however, at the University of Pennsylvania, whence he proceeded A.M., in 1815.

Adopting medicine as the business of his life, he began its study under the direction of Dr. Joseph Parrish, to whom he had been warmly commended by his father; and graduated with great honor at the Commencement held in the spring of 1818. His Thesis, on dyspepsia, was much praised, both for style and treatment; and he was told by Professor Chapman that it was one of the best practical disputations he had ever read.

The closest friendship immediately sprang up between the preceptor and his pupil, unlike as they were in so many traits of mind and person; and, being founded on mutual respect,

[1] The youngest, Horatio C. Wood, died during the month just passed.

confidence, and esteem, continued with unabated strength until it was dissolved by the death of Dr. Parrish, in 1840. The high professional reputation and winning personal qualities of that gentleman, attracted students from every quarter; and more time being required for the tuition of his constantly increasing class, than his other engagements would permit him to bestow, assistance became necessary. Recent graduates, among others, were accordingly invited to lecture on particular branches; and there almost insensibly grew up a private medical school, with its departments of surgery, medicine, anatomy, materia medica, and obstetrics. Dr. Parrish retained in his own hands the chairs of medicine and surgery; Dr. Richard Harlan had the charge of the anatomical theatre; Dr. Wood was the lecturer on materia medica and chemistry; and to Dr. Nathan Shoemaker was assigned the instruction in midwifery.

The school was established in no spirit of rivalry, but had its origin in the necessity of things; and, while entirely independent of any external influence, was preparatory and auxiliary to the University;—the sole object being the better training of young men for admission into that Institution. They were thus enabled to become more intimately acquainted with the elementary principles of their profession, and particularly with materia medica and anatomy—for which, as the ground-work, special arrangements were made—than they could otherwise have been. All this primary indoctrination is, of course, more thoroughly accomplished now; but it was not elsewhere so done in that early day. The school was fairly opened in 1820; and Dr. Wood informed the writer that the late Treasurer of the College, Dr. John Rodman Paul, was the first pupil whom he received under the new arrangement. It was an admirable association; the forerunner

of others speedily formed on the same model; supplied a want that was deeply felt; and many of our best men and ablest practitioners received there the impulse and the education which enabled them to achieve eminence in their respective spheres. *Tempora labuntur, tacitisque senescimus annis!*[1] Very few members of the earlier classes are now living;—none, it is believed, who are engaged in active business; and of the survivors of the classes immediately following, two or three only—among them Dr. Rodman and the late distinguished Professor of Anatomy in Jefferson College[2]—still continue in a green old age, and with scarcely bated zeal, to give to the public the benefit of their ripe experience; while a host of *Benemeriti*—Gilman, Norris, Pepper, West, Wistar, Gerhard, Carson, Stewardson, and many others—have, alas, departed to the Spirit Land!

The *personnel* of the school continued unchanged during several years; but, under the title of The Association for Medical Instruction, it was afterwards enlarged, and strengthened by the accession of several other gentlemen, among whom were Drs. John Rhea Barton, and Samuel George Morton. Not physic alone, but high principles of conduct, and much also that might be comprehended under the head of the minor morals, without which no character is perfect—delicacy, propriety, punctuality, professional etiquette, which is merely the expression of the Golden Rule—all found illustration and enforcement in the lives and precepts of the teachers. The students were enjoined to be sincere

[1] Dr. John Marshall Paul is probably the only survivor of the first class; and—the writer excepted—Drs. Jaudon, Morris, and Ashmead, of the next succeeding.

[2] Dr. Joseph Pancoast.

and honest, to do nothing merely for effect, to subordinate private interests to the welfare of the sick and to the dignity of their profession, and never to lose sight of its benevolent character, as that alone which properly requites its toils and privations, and renders it worthy of the love and pursuit of elevated minds. In a word, they were taught to be truthful, upright, and honorable men, who, animated by the spirit of real philanthropy, drew their inspiration from the inherent nobility of their calling, and not from the hope of pecuniary reward, for which many other occupations furnished greater inducement and opportunity. It was thus, as has been said, a nursery for good men and skilful physicians; and those of them who still linger among us, may, in their retrospect, think with pardonable pride, that it neither has been, nor is likely to be, surpassed in the quality and value of its productions.

If there was one lesson, more strongly than any other, impressed upon the minds of the pupils by their sagacious preceptor, it was that of a hopeful and intelligent reliance on the *vis medicatrix naturæ*. Instances illustrative of her wonderful recuperative power, were constantly held before them, and they were continually reminded that their proper function was to facilitate and assist, and not to disturb or thwart, her beneficent operations. Injudicious interference—the *nimia diligentia medici*—was especially deprecated, and many were the opportunities taken for the inculcation of the good old maxim, that in cases of doubt and difficulty, when they knew not what to do, it was better to do nothing. More, they were told, was to be learned from failure than from success, and they were consequently exhorted to the particular consideration and review of all adverse cases. In this cautious and conscientious school Dr. Wood had himself been

educated; the wisdom which he there imbibed, he would be careful to teach others; and it has been thus briefly adverted to, in order to indicate its influence in forming his own opinions and character.

The two friends differed as much in their personal appearance as in their mental constitution. Dr. Parrish was rather robust in form, of medium height, sanguine temperament, handsome countenance, benevolent expression, and very agreeable and popular manners. He dressed in Quaker costume, which well became his comely person; and was one of the last of those who clung to the fashion of small-clothes, silk stockings, and high-topped boots. He was an enthusiast in his profession, the study of which he began rather later than usual, and without the preliminary training which, great as were his qualifications, would have placed him so far above ordinary men. He was himself a pupil of Dr. Wistar, for whose memory he cherished the profoundest veneration; and his views, always practical and conservative, were independent, and often original;—anticipating in several important particulars, the discoveries and conclusions of a later and more scientific age. He was better read in the book of Nature, than in the current literature of his profession; more intent on the study and interpretation of the phenomena which she daily submitted to his observation, than conversant with the ideas and works of others; for which, indeed, little leisure was allowed by the exacting and paramount claims of a large and responsible practice. His lectures—full of good sense, wholesome doctrine, and thoughtful deduction—were not written on any regular and systematic plan, but were somewhat discursive in their range, and were made up chiefly of the results of his own experience; consisting, for the most

part, of the narration of apposite and important cases, and of the practical lessons to be drawn from them.

Dr. Wood, on the contrary, was tall, slender, and stately, with features regular and well-defined; dressed like other people, and with faultless propriety; was precise and accurate in his address and elocution; sedate in disposition, and, though always courteous and polite, rather formal and distant, in his deportment. He was quite as much devoted to his vocation as Dr. Parrish, but his devotion, with equal earnestness, had a more calm and reserved expression. His mind, naturally logical, had been severely disciplined, and was therefore methodical and consecutive in its operation. His lectures—minute, comprehensive, and well digested—exhausted the subjects of which they treated. In their completeness and adaptation to the wants of the students, they were fully equal to those which he subsequently delivered at the University. It was here that the young eagle tried his pinions, and prepared himself for the longer and more adventurous flights which he afterwards so successfully essayed. It was one of his characteristics to do thoroughly whatever he undertook. He always made himself perfectly master of his subject, and was very exact in imparting what he knew to others. It sometimes happened that one of his colleagues would be absent for a while, and, acting as his substitute, it might be supposed that, teaching a class which had not advanced far beyond the elementary principles of medicine, he would have relied on his general knowledge, without refreshing his memory by renewed study. But this he evidently had not done. He left nothing to the moment or to chance; but carefully prepared himself for each particular occasion; even though the lesson, if not positively distasteful, was one in which he had no special interest. The topic, for instance,

being anatomy, he re-informed his mind, in minute detail, with every foramen, process, nerve, muscle, artery, and vein, which entered into the instruction; and it was plain to all that he had just risen from its diligent review.

The first course of chemical lectures ever given by Dr. Wood was delivered a little before the time of which I have been speaking, in a small rear building used by Dr. Parrish as a private office; and was addressed to a non-professional audience, composed chiefly of ladies belonging to his immediate family and acquaintance. Chemistry, which has since made such giant strides, was then in its infancy; and much general interest was felt in the newly discovered gases, the properties of light, heat, and electricity, and a thousand other topics, familiar enough in our own day, but then novel and surprising. The little room did not afford accommodation for more than twelve or fifteen persons; and here, before a class entranced by his carefully prepared experiments and not likely to be hypercritical in its judgment, Dr. Wood made his first appearance as a lecturer. The benefits which accrued to him from this preliminary lay course, are obvious; he gained confidence and dexterity, and was thereby better fitted to perform his part in a more formal and important sphere.

The private office of Dr. Parrish being too small for the purpose, the lectures to the students were delivered in a room on the second story of a rear building, approached by a narrow passage running westwardly from Second Street along the northern wall of Christ Church yard, and reached by a flight of outside stairs. "Imagination fondly stoops to trace" the rude accommodations of that primitive hall; but, unlike the convivial resort where "nut-brown draughts inspired," there was nothing for "ornament," and not much

for "use." A few benches, one or two chairs for strangers, and a table raised on a platform, comprised the whole; the anatomical theatre being on the floor above. And here the chief—fresh from his professional engagements—arriving with great punctuality on the instant, would, when warmed by his subject, frequently lay aside his notes—as he had previously done his whip[1]—and pour forth his thoughts in a strain of rare, unstudied, and impressive eloquence. The location was afterwards changed, when larger accommodations became necessary, to a building on Zane Street, above Seventh; the temporary site of the College of Pharmacy.

The Philadelphia Medical Society was the principal debating arena in those days, and had a large membership of the more advanced students, who resorted thither for instruction. Drs. Parrish and Chapman, widely differing as they did on many points of pathology and therapeusis, would often come into collision, and each found in his opponent "a foeman worthy of his steel." The greater dialectical skill of the one—if, indeed, such superiority really existed—was more than counterbalanced by the good sense and practical disposition of the other. These intellectual encounters—the doctrines of Broussais were at that time a favorite topic of debate—had great interest for the younger members, who generally assembled in considerable force when they were expected. Drs. Physick and Gibson, with more official dignity, never attended the meetings. I do not recall the participation or even the presence of Dr. Wood, though he was, no doubt, occasionally there. He would have found

[1] The city had then—1820–1824—hardly one-fourth of its present population and extent. Physicians rode in two-wheeled chairs or gigs—that of Dr. Parrish was purposely a very hard one—and often without attendant. Dr. Physick alone was driven in a carriage and pair.

the College of Physicians, with its older, smaller, and jealously guarded fellowship, a more congenial sphere.

The College of Pharmacy was founded in 1821, and, the year following, Dr. Wood accepted an invitation to the chair of Chemistry, without, however, severing his connection with the Association. This position he held with increasing reputation until 1831, when it was exchanged for the chair of Materia Medica in the same institution. It is not too much to say that the instruction there given could not easily have been surpassed. Never had it been so well done in either department before. In matter and in manner, it was all that could be desired, or that the knowledge of the time permitted; abounding in experiment and illustration, and admirably adapted to the requirements of the young men who were to become our future druggists and apothecaries.

Duty thoroughly and conscientiously performed, knowledge extended and matured, and powers enlarged and strengthened by exercise, with the uncommon excellence and attractiveness of his lectures, placed him foremost among the teachers of these two branches of science; and it is not surprising, therefore, that in 1835, a vacancy occurring in the chair of Materia Medica in the University of Pennsylvania, Dr. Wood should have been chosen to fill it. Promotion thus steadily followed step by step, and always found him equal to the labor and responsibility which it involved. He was of a nature too refined to canvass or intrigue for place, however much it might be desired; and had too nice a sense of honor, too just a conception of what was due to the dignity of the profession, and to his own self-respect, to descend into the field with rough and jostling competitors. Like the lamented Godman, whose sun went down ere it

had reached its "meridian tower,"[1] he had nobly resolved to win success by deserving it. The posts which he attained and the influence he wielded, were the free, and, if I may so speak, the almost compulsory rewards of patient and unremitting labor, lofty aspirations, and exemplary conduct. In the present instance, the triumph was enhanced by the very great worth and signal qualifications of the rival candidate, Dr. Samuel Jackson.

It is a striking proof of the general appreciation of the cultivated mind and administrative talents of Dr. Wood that, the year before his election, he was offered the provostship of the University, vacant by the resignation of the Rev. Dr. De Lancey; a thorough scholar and very able divine, afterwards the Bishop of Western New York.

His assumption of the chair of Materia Medica was the immediate inauguration of a new and happier attitude of things. No expense was spared in demonstration by natural objects. Living specimens of medicinal plants were cultivated for the purpose in his own conservatories; others were sought for and brought from all parts of the country; and those of foreign habitat, which could not be raised in this climate, were imported, when practicable, from abroad. When these were unattainable, pictorial representations on a large scale were used instead. Everything was done to give to the class all possible experimental knowledge of the subject. If he had not excelled in everything else, it might have been supposed that this was his most congenial field. His mode of treatment was a great improvement on all previous instruction, and shone the more brightly from the contrast. It imparted life and interest to every object, and

[1] Immodicis brevis est aetas et rara senectus.

at once riveted the attention and informed the minds of his audience. "His lectures in this department," says Dr. Hunt, "were truly superb. They were most profusely illustrated by the finest specimens that could be obtained. Every species of medicinal plant that could be grown in this climate and in his conservatories, was shown in the living state for the benefit of the class. Some of the Fall preliminary lectures were made gorgeous with the foliage of the Tropics. The strictest attention was paid to the professor by the huge classes. A syllabus furnished gratuitously, and generally interleaved for notes, was in the hands of every student."[1]

Much of what he thus taught from his Chair in the University was happily available for more general use; and, in pursuance of his rule to make utility a prominent design in all his labors, he now compiled and published, in conjunction with his friend, Dr. Franklin Bache—who had succeeded him in the chemical department of the College of Pharmacy—*The United States Dispensatory.* The venerable Daniel B. Smith, President of the College, was originally a party to the undertaking; the first meetings were held at his house, and several papers were contributed by him; but other engagements, engrossing all his time, compelled his early withdrawal.

To form a just estimate of the necessity and value of this important work, some acquaintance with the previous condition of things is required. Many substances hitherto unknown, touched by the magic wand of chemistry, had been compelled to reveal their ultimate principles. Investigation of the medicinal properties of articles belonging to the vege-

[1] Medical Times.

table and mineral kingdoms was unceasing; many valuable discoveries had been made, and facts innumerable had accumulated, but, scattered abroad through various publications, they were, to a great extent, beyond common attainment. Collection, condensation, and classification had become necessary. Moreover, the literary and scientific reputation of the profession imperiously demanded a fitter representative than the existing formularies. All this the new Dispensatory afforded. It immediately supplanted the crude and unscientific compilations previously in use, and became at once the standard authority. From its first appearance in 1833, edition after edition—fourteen in all—followed each other in rapid succession, and it was regarded as an indispensable handbook to every physician and apothecary in the land. The work in its later revisions by its author, differs, as may be supposed, very greatly from the first editions; among other things, in containing nearly double the number of pages. New facts, new relations, new combinations, in constantly increasing number, required incessant supervision in order to keep pace with the progress of science. This was carefully and unweariedly bestowed, and each successive edition was consequently a vast improvement on the one preceding.

The compilation of the Dispensatory was undertaken not only to supply a great need, but with the further design of promoting the general recognition of The United States Pharmacopœia as the national standard of pharmaceutical preparation. This it contributed to do by constant reference to the processes therein recommended, and by the detailed descriptions which it gave of the medicinal agents which the Pharmacopœia contained. The one was thus made to imply, involve, and demand the other; and was largely instrumental

in effecting its adoption. The Pharmacopœia, originally set forth in 1820 with direction for its review at every decennial period, was almost rewritten by the authors of the Dispensatory, in laborious preparation for the first meeting of the Convention in 1830; and at each subsequent convocation was — chiefly by them — carefully revised and improved. Like the Dispensatory, it was a great boon to the profession, and, indirectly, to the country also. Furnishing an authoritative formulary, it secured order and uniformity where all—except as regulated by foreign prescription—would otherwise have been discord and confusion; and if the two gentlemen principally concerned in its composition had done nothing more, it would have been enough to establish for them an enduring claim to the gratitude of the public. It is difficult—perhaps impossible—to determine their respective share in this publication; nor, where each would have generously yielded precedence to the other, is it necessary to do so. Let it suffice to know that they toiled in harmonious agreement, and that we enjoy the fruit of their labors.[1]

In the year 1847, Dr. Wood published an elaborate *Treatise on the Practice of Medicine*, in two large octavo volumes. It was a comprehensive survey of the whole field; and was not only received with great favor by the profession in his own country, but abroad also, and particularly in Great Britain; where it had the honor of being adopted as the text-book by several medical schools, among them by the University of Edinburgh. A gentleman[2] who visited England several years ago, in conversation with a leading London surgeon,

[1] Their several contributions were, for the most part, signed by their initials.

[2] Dr. A. Douglass Hall.

presuming, interrogatively, that the work of Sir Thomas Watson was their principal reference and authority on the subject of which it treated, was promptly answered, "not so, we prefer that of your countryman, Dr. Wood." The fame which had been derived from his previous publications was greatly enhanced and extended by this very able production. It took rank at once as one of the most complete and reliable works extant. Six editions have been printed, and others may be expected, for, notwithstanding the appearance of later treatises traversing the same ground in all the light of modern science, it still deservedly maintains its place in public estimation; and, unlike the generality of medical books, gives promise long to survive its learned and lamented author. Clearness, vigor and beauty of style, simplicity of arrangement, fulness and accuracy of description, are a few of its many excellences. Nearly a generation has elapsed since its publication, and it would be strange if, in the rapid progress of inquiry, its pathology on some subjects had not become rather antiquated, and its therapeusis also arraigned, if not partially discarded. It must not be forgotten, however, that in regard to those points of treatment from which there is most dissent, the profession, hastily casting off from its ancient moorings, and going, as often happens in such cases, from one extreme to the other, has scarcely even yet attained to a haven of rest. It being hardly supposable that the older physicians were so universally in error, it has been suggested that the type of disease has changed, and that it is now less openly inflammatory, or more asthenic, than it was in their day. There are many reasons which may be adduced in support of this view, and it is certain that maladies of a low or typhoid character, depending upon cerebral depression and impaired innerva-

tion, are more prevalent now than they formerly were. However this may be, there can be no doubt, I think, that life is often lost, or health permanently impaired, by the omission of venesection in cases proper for its use; for by no other means can the morbid changes, incompatible with either, be so effectually arrested and prevented. Observation at the bedside, uninfluenced by theory or prepossession, must guide the judgment in each individual case.

It is no valid objection that the practice is liable to abuse by unqualified persons who, unhappily, gain admission to the profession. Indeed, such practitioners are doubly culpable, for the mischief they directly do, and for the discredit which they bring upon a mode of cure for which, timely and judiciously employed, there is frequently no effectual substitute. The same remark will apply, though with less force, to the use of mercury, which few physicians of experience would desire to have altogether abandoned, because it has been prescribed wrongfully and indiscriminately. Dr. Wood's book was written for educated men, and presupposes tact and intelligence in those who read it. The author's standard of professional qualification was a very elevated one; his diagnosis was careful and accurate; and, knowing his own full and conscientious preparation, he would not unlikely presume the equal caution and fitness of others.

There was little of originality in the mental constitution of Dr. Wood, and hence he was more inclined to deal with fact than to indulge in speculation. He has not, perhaps, added much to our stock of ideas; though almost unrivalled in the presentation of existing knowledge. He walked in the olden paths consecrated by long prescription and general approval, deferred much to authority, and was slow—as in the important concerns of life and health all should be—to

accept novel views and suggestions. The doctrine of malaria, for example, so universally adopted by the profession, and which, in his writings, as in those of others, is made to account for so many, and so diverse, morbid phenomena, he seems never to have called in question; though variations of electrical tension, acting upon an organism animated and governed by an element of analogous or identical nature, would supply a more philosophical and satisfactory explanation.[1]

When Dr. Wood first entered upon his professional studies, the stethoscope and other mechanical aids to physical exploration and diagnosis had hardly yet been introduced; and as much application and experience are required to use them intelligently, he could, for many years afterwards, have had very little more than the general acquaintance with them which every physician is supposed to possess. But when he began to write and to teach, it was necessary that he should be perfectly familiar with the subject. This he could scarcely become from the limited opportunities afforded in private practice. The infirmary, where the various forms of disease are brought together, and facilities given for comparison and verification, was better adapted to his purpose. He accordingly sought an appointment in the Pennsylvania Hospital, and his works furnish abundant proof of the dexterity and confidence which he acquired in the use of the instrument; training his ear with remarkable accuracy and success to the detection and appreciation of sounds, natural and morbid. Though he was now approaching the meridian of life, he did not hesitate to become once more a learner; entering upon his task with his wonted earnestness and resolution; and mani-

[1] Transactions of the American Medical Association, 1866.

festing at once his humility and conscientiousness by taking lessons from a colleague much younger than himself, who had recently returned from a long association with Louis and other eminent *savants* abroad.[1]

He was now engaged in the composition of his great Treatise on the Practice of Medicine, of which he speaks so modestly in the preface; and had an eye, moreover, to the professorship of that department in the University. The office of physician to the Hospital was, therefore, desired, not only for the more satisfactory investigation of disease and the acquisition of practical knowledge, but also for the further object of acquiring ease and readiness in clinical instruction; for which, as is well known, he became justly celebrated. He served the hospital from 1835 to 1859, a period of twenty-four years; being, throughout all that time, punctual and systematic in his attendance, and faithful in the performance of all the duties of that onerous and responsible position. His clinical lectures, like those in the University, were most studiously prepared, and largely attended. Well may the managers of the Hospital, in their memorial tribute, speak of his unfailing and intelligent interest, and of the great services which he had rendered. Never was praise more worthily bestowed.

In the year 1850, Dr. Chapman resigned the professorship of the Theory and Practice of Medicine, which he had so long and so ably held, and Dr. Wood, in deserved recognition of his eminent talents and acquirements, was with great unanimity elected to succeed him. In this high and responsible situation also, notwithstanding the ability and prestige of his distinguished predecessor, he made many salutary

[1] Dr Gerhard.

changes, introducing several important improvements, and acquiring for himself new and unfading laurels. His good sense and experience had convinced him of the truth of the Horatian precept, so unwisely ignored in much of the teaching, religious and secular, of our day—

> Segnius irritant animos demissa per aurem
> Quam quae sunt oculis subjecta fidelibus;—

a single glance, explaining and embodying the meaning, often imparting more accurate information, and making deeper impression, than whole hours of tedious and ill-understood description.[1] It is surprising that a truth, inherent in the very nature of man, should be so injuriously neglected by those whose peculiar province is education; and still more remarkable that Dr. Wood should actually have been the first in this country, and elsewhere also, to introduce into the chair of medicine the system of ocular demonstration. He had proved its utility and its superiority to the oral and didactic method then in vogue, while occupying the chair of materia medica; why should it not, he rightly thought, be equally useful, though perhaps more difficult of accomplishment, in teaching that to which the materia medica is merely subservient? In order the more fully to prepare for the new and arduous duties now devolved upon him, and with special reference to his intended system of instruction, he made a voyage to Europe, visited its most celebrated schools, and spent many thousands of dollars in the purchase of models, castings, and drawings of various pathological lesions. These formed a cabinet of morbid representations unique in this country, and supplied material for a course of medical tui-

[1] I have heard of Thee by the hearing of the ear, but now mine eye seeth Thee.—Job, xlii. 5.

tion which was as instructive and satisfactory as it was interesting and novel.

In 1856, Dr. Wood gave to the profession another valuable work, also in two volumes, entitled a *Treatise on Therapeutics and Pharmacology*, of which three editions have been published. A volume consisting chiefly of occasional lectures and addresses followed in due course; and in 1872 he issued still another, with the title of Historical and Biographical Memoirs; being a selection from the various productions of his indefatigable pen during the previous half century, and addressed for the most part to unprofessional readers.

Those who can recall the medical annals belonging to the beginning of the period just mentioned, may, perchance, remember the North American Medical and Surgical Journal; in the establishment and editorship of which Dr. Wood bore a very prominent part. The extent and value of his contributions may be seen by an inspection of the volumes in the library of the College. It was a quarterly publication, admirably conducted by an association of gentlemen; and was quite equal in learning and ability to any similar periodical either in this country or in Europe. It had an existance of six years; when it was discontinued, as so many other good enterprises have been, from insufficient patronage.

The East Indies appear to have had a wonderful fascination for Dr. Wood in the early part of his career, and his unemployed leisure, while waiting on practice, was devoted to the eager perusal of every accessible work relating to that country. At length the idea occurred to him of entering the field of historical authorship in his own person. He accordingly began to write a history of Christianity from its first introduction into India, as a part of his general plan; and had actually completed ten chapters of the narrative, when the

increasing demands of a profession which tolerates no divided allegiance, compelled him to abandon the design. His comprehensive scheme embraced a history of the British Empire in India, and for this also, he had simultaneously made considerable progress in the collection of materials. An address embodying some of his researches, delivered before the Athenian Institute, indicates his general aim; and gives, perhaps, a faint idea of the manner in which he would have treated a subject that would have employed all his time and taxed his powers to their utmost capacity. His contributions, imperfect and fragmentary though they are, bear evidence of the clearness of his style and his other qualifications for the undertaking; and if he had not accomplished so much in his proper vocation, we might be tempted to regret that he did not consecrate himself entirely to historical composition. He would certainly have attained to very high distinction in that department of literature; and, with the Irvings, the Prescotts, and the Motleys, have shed imperishable lustre on his name and country.

It would be out of place, in a cursory notice like the present, to do more than allude to what is elsewhere[1] more fully detailed, in relation to his minor and occasional productions. The bare titles of his numerous progeny would require more space than can conveniently be spared. His facile and vigorous pen, always in hand, "nor made a pause, nor left a void;" and many were the topics of public and of private interest on which it was employed. The more important of these—the papers which he deemed worthy of particular preservation—were, as already stated, collected and published by himself. Like his friend and fellow-trustee of the University, the late learned and admirable Albert

[1] Dr. Ruschenberger, Am Journ. Med. Sciences, October, 1879.

Barnes, whose celebrated Commentaries on the Scriptures were merely the expansion of the notes originally prepared for his Bible Class, Dr. Wood endeavored to utilize his writings also, by giving to the world what was primarily intended for a much narrower circle. Thus nothing really valuable was ever lost; his toilsome lucubrations received a permanent form; and by these, "he, being dead, yet speaketh."

In 1840, Dr. Wood, by the request of his medical brethren, prepared and read a biographical memoir, or eulogy, on the occasion of the death of Dr. Parrish. It was delivered in the anatomical theatre of the University, then situated in Ninth Street below Market; and was memorable both for the crowded audience, and for the presence of ladies for the first time in that locality. The subject was dear to his heart; and he paid a beautiful, chastened, and touching tribute to the memory of his preceptor and friend. In 1855, he discharged in this hall, at the instance of the College, the same office for his friend and companion, Dr. Bache; and now, amid the scenes so long associated with his presence, his own departure calls for regretful and loving commemoration.

Correspondence necessarily engrossed much of Dr. Wood's time, for it was frequently conducted with persons residing abroad, or in other States; and often related to matters of Pharmacy, etc., in which they were mutually concerned, either as individuals, or as members of committees. In one instance, his correspondent was a justly celebrated pharmaceutist in a neighboring city, and the question related to the preservation of certain articles combined according to a given formula. The confident assertion of the laboratory was controverted from the study, and the result demonstrated the remarkable sagacity and minute knowledge of its occupant. He was

always ready to aid young men in their pursuits, and to resolve for them any difficulties they might meet with. A gentleman[1] now occupying very creditably one of the chairs once filled by him in the College of Pharmacy, had, when just entering upon his honorable career, occasion to consult him on some point pertaining to his studies. The answer of Dr. Wood was a long letter, giving in full detail the information desired, and almost overwhelming the recipient with the sense of his kindness and condescension.

Dr. Wood retained the professorship of the Theory and Practice of Medicine for the space of ten years, from 1850 to 1860; when he abdicated the chair;[2] and thenceforward, though the willing slave of his own exacting temperament, was free in a great measure from the trammels and exigencies of official station. There were no reasons for his resignation, other than his own desire and the limitation which he had imposed upon himself. He was in the full tide of an unprecedented popularity, his mental faculties preserved all their vigor, and he retained unimpaired his fondness and capacity for application and research. He had reached the summit of his professional ambition, distinguishing himself in every stage of his progress; and there was nothing of satisfaction to himself, or peculiar benefit to the public, to be gained by the longer occupancy of the chair. The University honored itself, and showed its estimation of his invaluable services, by conferring on him the title of Emeritus Professor, and by electing him to be one of its trustees—the College of New Jersey having given him the honorary degree of Doctor of Laws several years before—while his medical brethren, gathering around him in a public dinner which they tendered to him on the eve of his departure for Europe a few months after-

[1] Joseph P. Remington.

[2] More modoque Caroli Quinti.

wards, testified their respect and affection for their associate and friend, with a warmth and an unanimity which could not have failed to be highly gratifying. This, his third visit to Europe, involving an absence of two years and three months, and undertaken with primary reference to the health of his wife, was made in company with Mrs. Wood, Miss Duane, and his nephew, Dr. Lehman Wells. On a previous excursion, made in the spring of 1853, he was accompanied by his lifelong friend Dr. Bache; travelled extensively in Great Britain, France, Italy, Germany, and Russia; and kept a journal of his observations and experiences, from which his future biographer will gather much to diversify and enliven his pages.

In 1823,[1] Dr. Wood married Caroline, the only child of Mr. Peter Hahn, a retired merchant of this city, with whom he lived very happily until her lamented death in 1865. She was a lady who had little regard for fashion or gayety, but, like all true women, found her duty and her pleasure in the more congenial sphere of privacy and love. The union was a most fortunate one. It gave to him a kind and sympathizing companion who, while she lightened his lonely labors by her approval and encouragement, shared his triumphs and made his life thenceforward comfortable and happy. The wealth she brought with her enabled him to devote, more lavishly than he could otherwise have done, his own small but steadily increasing resources to the procurement of books, apparatus, botanical gardens, conservatories, and whatever else he might desire, whether for study, or for the greater efficacy and development of his lectures. He is thought to have spent in their illustration, during several years, nearly all the

[1] Wednesday, April 2.

income that he derived from his chair—his pathological cabinet alone having cost ten thousand dollars.

In any biographical sketch of Dr. Wood, the influence on his fortunes of his marriage relations should not be overlooked. His excellent father-in-law, Mr. Hahn, with rare prescience, confidence, and magnanimity, not only gave with his daughter a very liberal dowry, but, dying intestate, left her—as was no doubt foreseen and intended—sole heiress of his whole remaining property.[1] Becoming thus early independent of his practice, with no obligation to make provision for others, Dr. Wood was raised above the indignities of low estate, and, unvexed by care and anxiety, was enabled to live in a state befitting his position and aspirations. His amiable helpmate therefore, to say nothing of her priceless value as a good wife, must be regarded as having contributed largely to his professional advancement; and although there is no reason to doubt that he would have achieved distinction under any conditions, however difficult and adverse, she made easy and smooth a path that might otherwise have been rugged and thorny.

All the elements of happiness rarely meet in any one individual; for privations and trials have their use, and it is not designed by Divine Providence that man should be supremely blessed in this stage of existence. If one common ingredient were wanting in the cup of Dr. Wood—otherwise full to overflowing—the very defect secured for him an undivided affection, and enabled him to pursue his patient investigations with less distraction than he could otherwise have done.

[1] The estate amounted altogether to about $200,000. Mr. Hahn died May 10, 1835, at the comparatively early age of 55 years. Mrs. Wood was born on the 16th of May, 1805, and died on the 4th of March, 1865.

It was not enough for the purposes of Dr. Wood, as a teacher of medicine, that the mind should be stored with knowledge. There were also required a ready command of that knowledge, and an aptitude for communicating it to others. Dulness, ruggedness, and prolixity must be avoided, and interest excited; or, whatever in other respects the merits of the writer and speaker, they will fail to secure attention and make due impression. This Dr. Wood strove to do, and signally accomplished. Nothing was overlooked, or disregarded, that might contribute to the general result. His chirography, if not beautiful, had the greater merit of being plain and legible; his lectures—rich in matter and illustration—were at once pleasing and instructive; his elocution natural, easy, forcible, and—when the subject permitted—frequently eloquent; while his style of composition —almost faultless—was smooth, chaste, graceful, and vigorous. He has no meretricious or redundant ornament, and sense is nowhere sacrificed to sound. He aims throughout to express his meaning simply and perspicuously, and thus to avoid all possible misunderstanding.

As it was said of Goldsmith—*nullum quod tetigit non ornavit* —so it may be with nearly equal truth be averred of Dr. Wood. His writings are almost classical in their character; he elevated the standard, and gave a right direction to medical education, rendering subsequent advance easy and certain; and left an impress on the chairs he successively filled, which will not soon be effaced or forgotten. As a teacher of medicine, at the bedside in the Hospital, or from the rostrum of the University, he was unrivalled in his own country and unsurpassed in any other. His treatises on the materia medica and on the theory and practice of physic have been invaluable gifts to the profession; and, in a word, it may

be asserted without contradiction, that no one has done so much to improve and extend the important branches which he more particularly cultivated. His works on these subjects are those by which he will be best known to posterity. By reference to dates it will be perceived that his two earliest and most important publications were written while yet he was hardly fifty years old; and those only who know their vast variety and detail, can form any adequate conception of the labor involved in their composition.

Since the beginning of his professional life, the progress of human knowledge had been great in almost every material thing; and not less so in medicine than in other branches of science. The stethoscope and various mechanical means of diagnosis had thrown a flood of light on many diseases. The ophthalmoscope had quite revolutionized the study of those of the eye; and the same principle had been applied with similar, if not equal, results to the affections of all internal organs accessible from without. Greater opportunities were afforded for verification. Anæsthesia had deprived surgery of its terrors. More attention was given to hygiene. Closer observation and more rigid deduction were demanded and bestowed. Facts had accumulated beyond all former precedent. Chemical analysis and synthesis had as truly given a new world to medicine, as Columbus did to Castile and Leon. And the spirit of inquiry, thus fully awakened, is continually extending its field of operation, and making new applications, new conquests, new discoveries. It redounds greatly to the credit of Dr. Wood—himself the great pioneer in all improvement—that he kept his mind free, in an uncommon degree, from early prepossession and prejudice; and was always to be found on the side of real progress and reform.

Well aware that no amount of professional training can countervail the want of a liberal and thorough preparatory education, he was ever a warm advocate of a higher standard of preliminary qualification, as well as of a more extended and comprehensive curriculum. Much, it is true, may be done by industry and conscientious devotion to supply the want; but after graduation the physician has ordinarily no control of his time, and it cannot be wholly retrieved. The greater part of mankind will not even make the effort to do so. With those, therefore, who have at heart the honor and usefulness of their profession, it has always been a cause of regret that so many obtain the Doctorate, "crammed," it may be, with knowledge purely professional, but without anything worthy of the name of scholarship, without any proper mental cultivation and discipline, and too often without the personal attributes—the *mores benevoli*—which should characterize the accomplished physician.

Most of the public writings of Dr. Wood are on matters connected with his profession—chemical reaction, the medicinal properties and therapeutical value of plants and inorganic substances, pharmaceutical formulæ, the laws of life, health, disease, and other exact and recondite subjects. The bias of his mathematical and logical mind was strongly toward scientific research. Originality and invention were not generally reckoned among his attributes. He was known to have "many a feat of high emprise and gentle deed essayed;" but few beyond his immediate circle suspected that he was also a votary of the Muses and an adventurer in the field of Fiction. The intellectual and the emotional are so different, and, in their highest development, so incompatible with each other, that excellence in both is rarely

attainable by one person. Perhaps Dr. Wood, in his own sound judgment, was no exception to the remark, for the authorship of an epic poem entitled, The First and Last, printed in England and published anonymously in this country, was never acknowledged by him during his life, and has only been revealed since his death. Among his manuscripts are poetical translations from foreign languages, original poems, essays on medical and other subjects, and also an unfinished novel of several hundred pages. Whatever may be their merits or demerits, their existence manifests the versatility of his talents and the incessant activity of his pen, passing thus in perpetual exercise "from grave to gay, from lively to severe;" and they were probably written with the double motive of diverting his mind and testing his powers in new walks of composition.

The old usages regulating professional intercourse, digested into a Code of Ethics chiefly through the agency of Dr. Hays, whose death we have so recently been called upon to deplore, were long observed with great nicety and strictness. Dr. Wood—upright and honorable in all his ways—clung to them with great punctiliousness, as the expression of right feeling and conduct. In consultations of more than two persons, the members, beginning with the youngest, gave their opinions in succession; and the utmost formality was observed in communicating with the friends of the patient; which was only done through the medium of the attending physician, to whom they were always properly referred for all necessary information. The consultants entered and left the room in the order of invitation, the gentleman asking for the consultation taking precedence. The consideration shown by Dr. Wood and the older members of that school, to

the feelings and judgment of junior and less experienced practitioners, is often recalled with grateful emotion.

Dr. Wood's practice—respectable in kind, and at one time considerable in extent—would not now be accounted large; nor, after the first few years, was an extensive business desirable; for the reason that its demands and distractions would have been incompatible with the proper prosecution of his studies. He preferred that it should be consulting rather than general, and his advice and assistance thus given—free from all assumption and parade—were always highly valued by those who sought them. Kind and considerate to the sick, he was a careful and judicious practitioner, punctual in appointments, cautious and accurate in diagnosis, full of resources in emergency, and sagacious, prompt, vigorous, and successful, in his treatment. Possessing thus all the qualifications of a skilful and accomplished physician, he was highly esteemed by his medical brethren, and was regarded by his patients, notwithstanding the reserve and formality of his manner, with the utmost confidence and respect.

His truthful and unselfish life was one prolonged and earnest protest against charlatanry and imposture of every kind; and he never hesitated to denounce them with indignant reprobation whatever guise they assumed, whether of individual fraud, or of organized deception. Medical quackery was of all others, from its reckless presumption and wickedness in trifling with the important concerns of life and health, the most abhorrent to his just and honorable nature. But he knew that as foul birds gather around their noisome food, so, where ignorance and folly abound, interested knavery and false pretension will always find greedy disciples and credulous dupes. He regarded with almost equal reprehension the employment by physicians of all illegitimate means

of personal advancement, as derogatory to themselves, injurious to others, and degrading to the profession. It is difficult—though not, therefore, the less obligatory—to maintain a high standard of professional rectitude, when the public, the party most interested in upholding it, offers such inducement to its abandonment; for, unfortunately, it is as true now, as it was in the days of the Prophet, "That truth faileth, and he that departeth from evil maketh himself a prey."

Dr. Wood was the connecting link between the physicians of a former age, now known only by tradition, and those of the present generation. At the beginning of the current century, medical men still received their instruction chiefly in private offices, very few, comparatively, leaving the country to perfect their education abroad. Those who thus added to their qualifications what was beyond ordinary attainment at home, were regarded as the magnates of the profession, and as persons having authority. Rush, Physick, Wistar, Chapman, and others, loomed up to the common eye as almost something more than ordinary mortals. There was only one medical school in the city, and the professors —men certainly of exceptional ability, character, and acquirement—were regarded with the greatest respect and veneration by their pupils. They bore, relatively to other physicians and to the public, a higher position than those of the present day. Not that they were actually superior, either in talent or in learning. On the contrary, so great has been the advance of science since their time, that much of their highest attainment would now be deemed rudimentary. The Jefferson College did not come into existence till long afterwards, and the venerable and distinguished Professor of Surgery in that Institution, whose semi-centenary of active duty was

lately celebrated by his brethren in a dinner commemorative of that event—himself, like Dr. Wood, *primus inter pares*—with all the resources of modern discovery at his command, holds really a more elevated rank than did the foremost of them; because competition is more active, and general acquirement greater and more common, than it was fifty or a hundred years ago. No age can boast a monopoly of intellect, though opportunity and circumstances may give to it greater prominence in some conjunctures than in others. There are those among us capable of equalling, and, with their superior advantages, of surpassing, their predecessors; as they in turn will be eclipsed by those who come after them. The inequality of original endowment is less than is usually supposed. Education and the diligent employment even of the single talent, make the general difference between man and man. *Labor omnia vincit improbus.* It is the one great faculty within the reach of common possession. It gives respectability to dulness; and often enables mediocrity to win distinction and attain positions which we are wont to deem the exclusive prerogatives of genius and ability.

It was a rule of conduct with Dr. Wood, as he stated with some emphasis to the writer a short time previous to his decease, not only to be always diligently employed, but to be always usefully so. He seems to have acted with an instinctive belief in the great truth, so repressive of human selfishness, that—

> "Nothing in nature, much less conscious being,
> Was e'er created solely for itself."

He loved work for its own sake, and for the satisfaction it afforded, but was ever magnanimously intent on making it subservient to higher and holier purposes than mere private

interest or gratification. Those who have read the life of Prescott, by his friend Mr. Ticknor, will perhaps trace some likeness between him and Dr. Wood, at least in the trait just mentioned. There is no happiness, says that pleasing writer and charming man, so great as a permanent and lively concern in some mental occupation. "No other enjoyment can compensate or approach to the satisfaction and constantly increasing interest in some intellectual labor; the subject of meditation when I am out of my study, and of diligent stimulating activity within. To say nothing of the comfortable consciousness of directing my powers in some channel worthy of them, and of contributing something to the stock of useful knowledge in the world."[1]

Much of the work of Dr. Wood required undisturbed leisure, and was therefore done at night, when he was less liable to interruption. His professional brethren, responding to nocturnal calls and passing his residence in their lonely walks, would often find his study alight far into the small hours of the early day. Much of his Treatise on the Practice of Medicine was written between ten o'clock in the evening and four in the morning. He toiled with as much zeal and assiduity as if his daily bread depended upon his daily labor. But happily his industry was a calm and steady flame, which, unlike the irrepressible energy of Godman, diffused its light without consuming the body that nourished it. It was a resource in all time of sorrow and of joy, and his especial solace after the loss of his wife. Every hour being thus consecrated by vigorous and healthful effort, the heart was

[1] Haec studia adolescentiam alunt, senectutem oblectant, secundas res ornant, adversis perfugium ac solatium praebent, delectant domi, non impediunt foris, pernoctant nobiscum, peregrinantur, rusticantur.—Cicero.

cheated of its heaviness, and his solitude less oppressively felt. Employment was therefore to Dr. Wood, as to Mr. Prescott, the source of unmingled pleasure; and the direction which he wisely gave to it, rendered it as beneficial to others as it was agreeable and profitable to himself. It was a greater effort to leave off than to begin work; for, apart from temperament, he had every possible motive to exertion—duty, usefulness, praise, fame, and pecuniary remuneration. He is justly to be regarded as a public benefactor, and not the less so that his labors greatly improved his own estate. Both results were the legitimate consequence of ends judiciously chosen and faithfully pursued.

Dr. Wood was frequently selected to direct the proceedings of public medical assemblies, for which he was peculiarly fitted by his readiness, self-possession, and acquaintance with parliamentary rules; and was expected as a matter of course to bear the leading part in all the committees, or delegations, of which he was a member. His name and approval were always sure passports to general favor and confidence. He served at different times during his life as the presiding officer of several benevolent associations, among others of the Institution for the Deaf and Dumb; and at his decease was the President of the American Philosophical Society, and of the College of Physicians; offices which he filled with equal ability and acceptance for the long terms respectively of twenty and thirty-one years. As the head of the College he was punctual in his attendance, and his interest in its proceedings was not, as we all know, restricted to the mere perfunctory discharge of his official duties. His counsel, freely given, was always practical, sound, and prudent. When intricate or difficult questions came up for discussion, and confusion arose from the conflict of opinion, he would often

leave the chair, and, taking his place on the floor, contribute by his cogent argument and lucid exposition to their disentanglement and solution.

His trusteeship of the University was marked by the interest and fidelity which were conspicuous in all his engagements. Cherishing a warm interest in its welfare generally, and particularly in that of the medical department, he would naturally be expected to take a principal share in the business of the trustees; and his judgment, to which in all matters great deference was deservedly accorded, would be regarded by his colleagues almost as law, in questions pertaining to his profession. There would thus be fostered a kind of paternal or personal rule over the branch of which he was so long the animating spirit, and still an honorary member, that might not always be compatible with a proper sense of independence and official equality. This autocracy, to which under the circumstances the inclination would be strong, must have required on his part constant watchfulness and self-control, and on that of the Faculty unbounded confidence in his generous and unselfish devotion.

Having purchased the ancestral mansion in his native State from a descendant of the original possessor, Dr. Wood was accustomed to spend in retirement there a part of the summer months of every year. He took great pleasure in agricultural pursuits; several fields were planted with peach and other fruit trees, and many improvements on the farm were made under his direction and superintendence. For the cultivation of cranberries as a business transaction, he had an especial predilection, and confidently expected rich returns from the large investments which he had made in that article. He bought waste and marshy lands from the neighboring farmers, of little or no value to them, and which they

would gladly have sold at almost any price, voluntarily paying therefor a sum far exceeding what they would have dreamed of asking; and this he did because, expecting them to appreciate greatly in his hands, he would not that they should become dissatisfied with the sale, and regard him as one who had enriched himself at their expense. Many acres of land thus purchased, were prepared with considerable cost, and planted with this beautiful berry. But the cranberry crop is an uncertain, and a somewhat capricious one. The plant requires for its profitable cultivation, not only a congenial soil and favorable meteorological conditions, but also a resident and experienced proprietor; and whatever the future may have in reserve, the hopes which he entertained have not yet been realized. Perhaps the cautionary adage, *ne sutor ultra crepidam*, is destined to receive still further confirmation by his example![1] In arboriculture also, he claimed to have made some discoveries, and he wrote several papers to prove that the non-productiveness of fruit trees was often owing to the lack of alkaline ingredients in the exhausted soil. He accordingly found that by digging trenches around the trees and applying wood-ashes liberally to their roots, the vigorous became more prolific, and those that were sickly, and apparently even dying, recovered and brought forth plentifully. Where ashes are not procurable, he suggests artificial compounds containing soda, etc. There can be no question of the utility of such fertilizers; they would be particularly useful in the sandy soil of New Jersey; but the idea is not original, though the application was

[1] It was a favorite saying of Sir Walter Scott—of the truth of which he was himself a memorable example—that the wisest of mankind often reserve the average stock of folly to be all expended upon some flagrant absurdity.

doubtless more effectually made by him than it had hitherto been.

With a just sense of human responsibility, Dr. Wood thus endeavored to make his pecuniary resources, as well as his time and talents, subservient to the welfare of his fellow-men, and his prolific brain was always teeming with thoughts and expedients for that purpose. Hospitals he considered one of the most unexceptionable forms of public charity, because, while they afforded a desirable refuge for the sick, they made in various ways—the increase of medical knowledge, and the practical training of physicians and surgeons—the very afflictions of mankind promotive of the general good. He would gladly have built and endowed such an institution with his own private means, had they been, consistently with other claims, sufficient for that purpose; and he fondly hoped that he had made by his testamentary dispositions provision at least for large extension and accommodation.

It might be supposed that the mental constitution of Dr. Wood would have induced him to take delight in all the problems of abstract science. His reasoning faculty was strong, and he was in his appropriate element in whatever required minute investigation and research. Sound common sense was a distinguishing characteristic of his active and penetrative mind. In everything he was methodical, accurate, and exact. His memory was retentive, and he had a competent, if not a familiar, acquaintance with several modern languages, especially French and German. He preserved to the last his love of letters and his early taste for classical literature. He read much on general, as well as on professional, subjects, and duly appropriated what he read. On almost every topic—politics, religion, literature, science—he had well matured and decided opinions. His conversational

power was considerable, and he produced with ready and confident expression the treasures of a thoughtful and cultivated mind. Honor, propriety, delicacy, manliness, sincerity, candor, and refinement, were prominent features of his moral nature. His purity was that of the snow or lily, and no one in his presence ever ventured to indulge in ribald jest or unseemly remark. He was a strictly virtuous and religious man, and while he sought after the things that are true, honest, lovely, and of good report among men, strove to do justly, love mercy, and walk humbly with his God. Temperate, sober, conscientious, and habitually watchful over himself, while temptation was excluded by constant occupation, he had done less perhaps than most others to stain the ermine of his soul, and blunt the edge of his moral perceptions. His life has thus left few traces to be erased.

Modest and unassuming in his general demeanor, he had yet a proper self-respect, and a due estimate of his own character and position. In travelling, both in this country and in Europe, he affected a good deal of state, sometimes even visiting his plantation four-in-hand. This he did from no feeling of self-importance or fondness for display, but because he considered himself the representative of a profession, the honor and respectability of which, so far as it was in his keeping, he guarded with as much vigilance and care as he did his own. He was free in an uncommon degree from all petty pride, vanity, pretension, and conceit. Nature had given him a sound constitution, and had endowed him with good abilities which he had diligently improved; gaining, like the faithful servant, ten other talents besides them. His superiority to other men consisted in his mental equipoise, clear perception, and steady application, rather than in any extraordinary, original powers. He attained eminence less by what had

been done for him, than by what he did for himself. He had a lofty ideal, with great perseverance and tenacity of purpose; and with laudable ambition resolved from the beginning to win a high place in the Temple of Fame. It was this noble aspiration which led him to "spurn delight and live laborious days." His great talent, the common property of all who excel, was his capacity and disposition for work. He had set before himself a definite purpose; and the satisfaction he derived from the pursuit, the opportunity which it afforded of benefiting others, the self-discipline which it involved, and the training and development of his own faculties, were, other considerations apart, abundant recompense for all his toil. In this he acted with the enlightened forecast that makes both worlds its own; for though Christianity has respect to the moral rather than to the intellectual, the sage declares, what reason also approves, that—

> "The more our spirits are enlarged on earth,
> The greater draught shall they receive of heaven."

One common fate awaits alike "those who creep and those who fly," but Dr. Wood nobly determined to be among the distinguished few whom posterity will cherish, rather than sink into oblivion with the unrecorded multitude; to make his path luminous with deeds of love to man; and to leave the world more blessed for his pilgrimage through it.—"Behold I have not labored for myself, but for all them that seek wisdom."[1]

The toast of the day at the dinner given to Dr. Wood on his departure for Europe, describes him as "The model gentleman," and from this averment there will be no dissent. Courteous and urbane, his whole deportment was that of a

[1] Ecclesiasticus.

high-toned and well-bred person. He was one of those exceptional characters of whom it is difficult to speak otherwise than in eulogy; for while his virtues were many and great, his blemishes were few and venial—consisting rather in reserve of manner and inflexibility of temperament than in any moral defect. Naturally disposed to be formal and ceremonious, he always bore himself with dignity and self-possession, and gave to casual acquaintance little invitation to familiarity. He moved on a higher plane than most others, and was perhaps too passionless, too distant, to be to ordinary people—who would hardly have failed to feel some constraint in his society—a very agreeable companion; though in the company of his friends, and in the unreserve of social intercourse few were more affable and pleasant.

But these defects, if they impaired his popularity, heightened the veneration with which he was regarded, and won the respect, esteem and confidence of all who approached him. He had no personal vices, and no habits incompatible with the utmost delicacy and refinement. He was a man of marked individuality, undemonstrative deportment, strong will, kindly affections, steady friendships, and firm but liberal mind. He was generous in his hospitality, and loved to surround himself with men of intelligence and learning. Sincere and guileless himself, he disliked all unreality and false sentiment in others. He was strict and unfaltering in his own devotion to duty, and required similar attention on the part of all those with whom he had anything to do. Harmoniously blended with his mental endowments were moral qualities of a very high order. In the battle of life he had, as has been stated, some exceptional advantages; but the result under any circumstances would have been nearly the same; for a resolute nature controls events, and

makes for itself the opportunities which it does not find. His long and useful life is a memorable example of elevated views, unswerving integrity, and indefatigable industry. He did not possess—few were they who did—the winning affability, the conversational charm, the *bonhommie* of Jackson, nor the sparkling brilliancy and vivacity of Meigs, and others also may have excelled him in some particular traits; but in the rare combination of eminent service with all that exalts and dignifies humanity, it may be asserted, without disparagement to any, that he was "the noblest Roman of them all."

One of the resolutions adopted by the College speaks of Dr. Wood as possessing qualities which fitted him to be a leader of men, and this I apprehend is sufficiently apparent from what has already been said. It was from no personal magnetism such as so signally marked his friend Dr. Parrish, that he was so regarded; but by reason of the confidence universally reposed in his probity, wisdom and ability; and, underlying this, a belief also in his reserve force; for it was evident that in all the positions he had occupied, and in which he had always acquitted himself with distinction, he had never put forth his whole strength. The foremost place was of course always accorded to him by his medical brethren, but he would have gained priority in the forum, or in the field, or in any other walk of life that he had happened to choose. Many have been the physicians who, with fewer military qualifications than he possessed, have temporarily laid aside their profession, and, without loss of reputation, vindicated with the sword the cause of their country. It was his happier lot to excel in the arts of peace; to save, not to destroy; to succor suffering humanity; and, when he could neither prevent nor heal, to mitigate and

comfort. Thousands have gone forth instructed by his living counsel to wage their holy warfare against disease and death; and far other thousands have drawn from his works the inspiration, and from his armory the weapons, which enabled them to achieve success in their arduous conflict.[1] The victories of peace surpass those of war, in that, inflicting no wound and causing no sorrow, they are productive of unmingled good; and, judging by this standard, the College of Pharmacy in its obituary memorial rightly describes Dr. Wood as one of the great men of the world.

The Chair of Practice, which was the goal of his aspirations, he voluntarily resigned after a self-imposed restriction of ten years, in the full possession of his mental powers, and with all his capability for labor unimpaired.[2] It was not, as we all know, to indulge in idle and inglorious ease. The field of knowledge is illimitable, and Dr. Wood was always actively in favor of progress and reform. He continued therefore to read and to write with the same diligence and energy as before. The successive editions of his works required constant supervision to keep pace with the wonderful accumulation of new facts, and with the constantly widening horizon of science, which "like the circle bounding earth and skies" is ever receding as it is approached. The institutions with which he was connected—the Philosophical Society, the College of Physicians—these and a variety of other matters employed his time and his pen, and furnished abundant

[1] Of his three most important publications—the Dispensatory, the Theory and Practice of Medicine, and the Treatise on Therapeutics—the sales respectively, have been 120,000, 36,000, and 12,000 copies. The aggregate of his published writings exceeds 7000 8vo. pages.

[2] Hé bien! qu'est ce que cela, soixante ans? C'est la fleur de l'age, cela. —Molière.

occupation far into the evening of life; until indeed his waning health and physical disabilities warned him that the time of his departure was at hand.

His name recalls that of the great sage of Verulam, whose writings may have contributed to mould his intellect; but, unlike him, there was nothing venal, sordid, penurious, or mercenary, in the disposition of Dr. Wood. He was as kind and liberal to others as he was hard and exacting to himself. Recognizing his stewardship as that for which he was to give account, he endeavored faithfully to discharge its obligations. His private charities were large and gracefully bestowed. They were not it is true dispensed indiscriminately, for he justly thought that all should work who had the power to do so; but no really deserving person or object ever sought relief or assistance in vain. With a far-seeing philanthropy, he was munificent in some of his benefactions. The Faculty of Medicine auxiliary to the University, consisting of the five chairs of zoology and comparative anatomy, botany, mineralogy and geology, hygiene, and medical jurisprudence and toxicology, founded at his instance in 1865, was supported by him during his life, and permanently endowed at his death. A greater sum was devised to the University for the increase of hospital accommodation; and the Philosophical Society and the College of Physicians also shared largely in his beneficent dispositions.

Dr. Wood was by birth-right a Friend, but, marrying as it is termed "out of meeting," he was according to the rules of order formally disowned by the society, though he always maintained friendly relations with its members. He was cosmopolitan in his disposition, and his sectarian affinities were consequently never very strong. He often accompanied his wife, who was a Lutheran, to her place of worship; and

his religious opinions were probably more in accordance with those of that denomination than of any other. His early association—*par nobile fratrum*—with the late Rev. Dr. Wm. H. Muhlenberg, who thus began his long and useful life, may have given to them an inclination in that direction. His views and his manners were of course more or less tinctured by his birth and connections; and when in company with Friends he would sometimes adopt their mode of speech, but never in his intercourse with others. He always dressed in black, was neat in his attire, and except that he wore an artificial *chevelure* as a substitute for what nature—generous enough in her other gifts—somewhat niggardly denied, had like other gentlemen little peculiarity about him.

The death of Dr. Bache in 1864, and that of Mrs. Wood a few years later, weighed heavily upon his spirits. They were losses that could not be repaired; and life ever after had a more subdued and joyless expression, particularly during its last few years of infirmity and disease. His work was done, the light of his dwelling had been extinguished, the day was declining upon him, and the shadows of the evening were closing around his lonely path. He had transcended the ordinary period of mortality, and there was nothing left for him on earth but faint repetition, amid suffering and sorrow, of former pleasures and occupations; while he was lured onward and upward by the joys of Heaven and the hope of reunion with those whom he had loved and lost. He told his friend the president of the College of Pharmacy,[1] who called upon him while he was revising the last splendid edition of the Dispensatory, that he desired to live to complete it, and would then be ready for

[1] Dillwyn Parrish.

his departure. It was the only thing personal to himself for which he had now to care, and he wished, for the benefit of those who were to come after him, to leave the work that he loved in a condition as perfect as possible.

He had suffered a good deal occasionally from pains and nervous disturbances which he attributed to atonic gout, having had while yet a young man one, and one only, open attack of that complaint. His health began more seriously to fail a few years before his death; probably from some renal affection. His power of locomotion gradually became so seriously impaired that he walked abroad no more; and, owing to the difficulty of getting into his carriage, rode out also less frequently, until at last he ceased to do so altogether. He had at this time no particular suffering, and attributed his disability to undue exertion in waiting upon Mrs. Wood during her protracted illness. A change gradually came over his physical condition. From being spare and lithe, he grew large and unwieldy, and, except in features and expression, quite unlike his former self. As disease progressed and symptoms grew worse, his countenance assumed a bloated and heavy appearance; and in conversation he would often fall into a momentary drowsiness. Still, though clouded and oppressed, his mental faculties were not very greatly impaired; and—with some defect of memory, of which there had long been occasional manifestations—they continued to be pretty good until within the last few months of his life.

In August, 1878, he visited once more, with some effort and inconvenience, his ancestral farm in New Jersey; and, the autumn of that year being unusually mild, prolonged his sojourn—lingering over the scenes of his youth and his beloved nurseries of tree and plant, the *dulcia arva* which he was never to see again—until late in December; when the

increasing coldness of the weather compelled him to turn his face homeward, ere return in his weak and helpless condition should become difficult or impossible.

He came home—to die! No longer useful to the world, and a burden to himself, he awaited with Christian hope and unmurmuring submission the inevitable hour, daily growing more and more feeble, until death—long desired and immediately caused by suspension of renal action—came to his relief.

Dr. Wood died on Sunday, March 30, 1879, aged eighty-two years and seventeen days; and on the Wednesday after, his remains, followed by a long train of sorrowing friends, were silently interred at Laurel Hill, as the manner of the Friends is to bury. Not a word was uttered, not a note was heard, either at the house or at the grave. All instinctively felt that fulsome panegyric or trite remark would be alike out of place on such an occasion. They came "to bury Cæsar, not to praise him." But though no religious rite was observed, no comforting service performed, those who were present felt none the less deeply that the object of their love and veneration—the Christian gentleman, the representative physician, the knight of stainless record—had been gathered to his fathers after a well-spent life ripe with years and honors, "in the confidence of a certain faith, in the comfort of a reasonable, religious and holy hope, in favor with God, and in perfect charity with the world."

He died amid universal sympathy and regret. The press everywhere gave expression to its sorrow; the institutions with which he was connected embalmed his services in loving obituaries; the medical journals poured forth their grateful tributes to one who was among the foremost of the illustrious men who have adorned the profession; all mourned

his loss, all strove to do him honor, all united in offering the homage of their profound respect and admiration to the memory of a man of eminence, usefulness, and worth.

> "Of those
> That build their monuments where virtue builds
> Art thou; and gathered to thy rest, we deem
> That thou wast lent us just to show how blest
> And lovely is the life that lives for all."

In any mere outline like the present, it were hardly possible to do more than touch very lightly on some of the more salient points of a character that would require a volume for its due development. If the sketch which I have drawn, impart a just, though a faint and imperfect, impression of the original, it will not be deemed altogether unsuccessful. A skilful pencil would have given to the picture life and coloring, and have caused it to stand forth more vividly from the canvas; but—*non cuivis homini contingit adire Corinthum.* The portrait is a faithful transfer of my own conception, and may not, therefore, be entirely satisfactory to all. Craving the indulgence of the College for whatever of failure there may be in design and execution, I take my leave—not without misgiving, from conscious demerit, that the latter part of the award may be mine—in the language of the author of one of the Apocryphal Books:—

AND NOW IF I HAVE DONE WELL, AND AS IS FITTING THE STORY, IT IS THAT WHICH I DESIRED; BUT IF SLENDERLY AND MEANLY, IT IS THAT WHICH I COULD ATTAIN UNTO.[1]

[1] II. Maccabees, xv. 38.

RESOLUTIONS OF THE COLLEGE OF PHYSICIANS.

At a special meeting of the College of Physicians, held Tuesday, April 1, 1879, on the occasion of the decease of the late President, Dr. George B. Wood, the following resolutions were unanimously adopted.

The Fellows assembled at the call of the College on the occasion of the decease of their late President, Dr. George B. Wood, respectfully offer to the memory of that excellent, venerated, and distinguished man, the homage of their profound sorrow and regard.

Resolved, That in his death they mourn, not only their own loss, but that also of the community in which he lived, the country to which he belonged, and the profession which he adorned; for his fame, his virtues, and his services, coextensive with all, were the common property of all, and shed a lustre on the American name and character.

Resolved, That by this sad event they lose a Christian gentleman, refined, courteous, and sincere, kind, benevolent, and considerate; one who, though not unconscious of high achievement, was yet modest and unassuming in disposition and demeanor; of elevated walk and noble aspirations; and upright, honorable, and consistent in all his conduct during a long life closed amid universal sympathy and regret.

Resolved, That assuming from the beginning of his career a prominent rank as a teacher of medicine, he greatly improved upon the existing methods of instruction, by introducing into the tuition, when natural objects were unattainable, the system of pictorial representation; and by his exactness, order, and exhaustive treatment of every topic, fixed the attention and enlightened the minds of the students; while by his pure moral principle, exemplary life, and blameless deportment, he embued them with his own deep sense of the dignity of man, and of the honor, usefulness, and responsibility of their profession.

Resolved, That the literary world is deprived by his death of a scholar of rare and varied attainments; well-read, not only in medicine and its col-

lateral sciences, but also thoroughly versed in many departments of polite and general literature, to several of which he made interesting and valuable contributions.

Resolved, That he was not only an example of high moral worth and refinement, but also of patient, persevering, and well-directed industry. His mental characteristic was not genius, properly so called; but he possessed capacity of a high order, and had a methodical and mathematical mind, a striking feature of which was its strong, masculine common sense. With this was united the greatest, perhaps, of all talents, steady and unwearied application. It is, no doubt, true that "the man is yet unborn who duly weighs an hour," but Dr. Wood made a much nearer approach to that estimate than is done by most others; diligently improving the fleeting moment, "hiving wisdom with each studious year," and always seeking to benefit mankind by lessening the sum of human suffering and increasing the resources and extent of professional skill. It was a rule of his life not only to be always busily employed, but to be always usefully so.

Resolved, That these and many other attributes of person, heart, and mind, made him emphatically a representative man; one to whom all willingly accorded primacy of merit and position, with fullest confidence in his rectitude, wisdom, knowledge, zeal, and ability. He was an able, ready, dignified and impartial presiding officer, both of the College and of other bodies; a skilful and sagacious physician; an eloquent and instructive lecturer; an eminent author, whose works have contributed greatly to the advancement of medical science; a munificent patron of the profession which he loved; a wise and prudent counsellor; and, withal, a warm and unwavering friend. Seldom has there been found in one person such an assemblage of qualities, fitting their possessor to be a leader of men, and causing him to be regarded *ante alios omnes praestantissimus.*

Resolved, That a Fellow be appointed by the Chair to prepare for the College a memoir of Dr. Wood; and that the Fellows furthermore manifest their respect by attending in a body the funeral of their late honored and lamented President.

Resolved, That a copy of these resolutions be sent to the family of Dr. Wood, and published also in the medical journals and daily papers of the city.

DINNER TO DR. WOOD.

The account of the dinner to which allusion is made in the Memoir, is probably from the pen of the late Dr. John Bell, and, with the "Ode," is here reproduced, as being further illustrative of the estimation in which its subject was held by those who knew him best and loved him most; and also as affording an opportunity for a passing tribute to the memory of a learned and amiable man, who was an associate of Dr. Wood in the editorship of the Medical and Surgical Journal, and also an eminent writer, to whom the profession is much indebted for the diffusion of a sound and healthful literature.

"DINNER TO GEORGE B. WOOD, M.D.

"This eminent physician having recently resigned his Chair in the University of Pennsylvania, and being about to embark on an extended tour in Europe, a public dinner was tendered to him on behalf of the medical profession of Philadelphia. Dr. R. La Roche presided, assisted by Drs. George W. Norris and W. S. W. Ruschenberger as vice-presidents, and an additional committee of arrangements consisting of Drs. Coates, Littell, Stewardson, West, Rodman, Gerhard, Peace, Biddle, and Wister. An eloquent and feeling review of Dr. Wood's professional career was presented by the president of the day. In offering the regular toast on the occasion, his claims to distinction as a writer, lecturer, and practitioner, were happily sketched, and the affectionate attachment and veneration with which he is regarded by his professional brethren in Philadelphia, were portrayed in just and feeling language. The toast of the evening was the following:—

"'Our guest, Dr. George B. Wood—the distinguished physician, the virtuous citizen, the model gentleman, the tried friend.'

"Numerous volunteer toasts were offered, and many good speeches were made by Drs. Dickson, Bache, Rogers, Jewell, and others. One of the pleasantest features of the evening was the distribution of a spirited ode

written for the occasion by Dr. Littell, and sung with much effect by the company. The entertainment was altogether a most agreeable and elegant tribute, and a fitting closing scene to the professional career of one who has done so much to dignify and illustrate American medicine."—*North American Gazette*, May, 1860.

SONG.

Tune—*Auld Lang Syne.*

JUSTUM ET TENACEM VIRUM.

We gather round the festal board
  A parting friend to greet,
And render to his high desert
  A tribute that is meet.

For he by years of earnest toil
  Has won himself a name
Which long shall be with pride enrolled
  Upon the scroll of Fame.

No doubtful means, no devious paths
  E'er lured his feet aside;
But honor, with unfaltering step,
  Has ever been his guide.

The cynic, who his lantern bore
  Each passing face to scan,
Had found, what he so vainly sought,
  In him an honest man.

With open hand and generous aim—
  In Truth's own arms arrayed—
He many a feat of high emprise
  And gentle deed essayed.

And now he from the field retires—
  His shield without a stain—
And shall we from such knightly worth
  Our health of hearts refrain?

Then, while ye fill your glasses fair,
Let this your greeting be—
[Standing.] That He who grasps the viewless wind
May guard him on the sea;

Protect him in his pilgrimage;
And, when his wanderings cease,
Restore him to his home again
In happiness and peace.

And when the inevitable hour
Shall bring his long repose,
May visions of that better land
A brighter scene disclose.

Meanwhile, with fond, admiring hearts
We gather round him here,
With song, and wine, and social mirth,
His parting steps to cheer.

MEMOIR

OF

ISAAC HAYS, M.D.,

FORMERLY ONE OF THE CENSORS OF THE COLLEGE, PRESIDENT OF THE ACADEMY OF NATURAL SCIENCES, SURGEON TO WILLS HOSPITAL, ETC.

By

ALFRED STILLÉ, M.D., LL.D.,

VICE-PRESIDENT OF THE COLLEGE.

[Read February 4, 1880.]

Every thoughtful man seeks to order his life so that it shall afford him the greatest amount of happiness. But men's ideas of happiness are as diverse as their features. To some sensual sloth is attractive, to others a feverish pursuit of pleasure, to others a lust for wealth, popularity, fame, or power. Even if they secure these objects, they are apt to find them as unsubstantial as shadows; and, when life draws near its close, they mourn with unavailing regret over blighted joys and disappointed hopes.

If society were composed of men like these alone, it would be destined to a rapid dissolution; indeed, out of such materials it could never have been developed. Historically, we know that it emerged from the dark waste of barbarism, only by looking beyond the present into a future which might grow out of the elements of the past. While men have probably lived in every age who moulded their conduct more or less successfully on this ideal, only very recent generations have witnessed its general recognition and illustration.

Even now the examples are not numerous of men from whose characters the grosser elements have been eliminated, and who seek happiness, first of all, in the culture of the intellect, the moral sense, and the affections. But whenever they do arise, their action is not confined to the development of their own intellectual and moral natures; its beneficent influence is apt to be felt over a wide sphere. Virtue has its contagion no less than vice; it vivifies and beautifies society as much as vice deforms and corrupts it, and its influence is none the less powerful because it is silent and unobtrusive. The world does not always nor readily recognize its greatest benefactors. They are not apt to be those whose names are most conspicuously associated with public acts, or with the great changes that stir the political, social, scientific, or literary spheres. They are oftener modest and silent thinkers who, in the seclusion of their closets, lay plans or evolve ideas that become the inspiration and the law of more enterprising men who apply them to their purpose and render them practically efficient. Teaching by example rather than by precept, they illustrate the beauty and the power of a life steadily devoted to beneficent ends.

A man of such qualities and of such exceptional virtues was our late Fellow, Dr. Isaac Hays. While yet only a student of medicine I learned to know him, and from that time until his death, I never had occasion to reverse my judgment of his character, or abate anything of my esteem and respect for his person.

Isaac Hays, born July 5, 1796, was the son of Samuel and Rachea Gratz Hays, of Philadelphia. His father was a wealthy merchant, and brought up his family with all the culture and luxury which his means enabled him to command; nor was it until mature manhood that the subject of

this memoir was obliged by stern necessity to win his bread by acquisitions which had seemed intended only for the delectation of his life. The refinements of his early home and social circle doubtless impressed upon him that courteous and affable manner which always distinguished him. His school education was acquired while the traditions of English scholarship were still living influences, and when it was a cardinal doctrine that education was designed, not so much to fill the memory with facts as to cultivate all the natural powers and fit them for use in any field whatever. He was for many years a pupil of the Rev. Dr. Samuel B. Wylie, so famous in this city for his classical learning, and as a schoolmaster, and who was afterwards elevated to the chair of ancient languages in the University of Pennsylvania. At that institution Dr. Hays graduated A.B. in 1816.

In those days the amenities of scholarship were habitually associated with the courtesies of life, as the frequent use of the phrase "a scholar and a gentleman" sufficiently attests, as well as the term "literæ humaniores" which described a literature that was supposed to refine the mind and manners, and of which the classical languages were the indispensable foundation. It cannot be doubted, I think, that the delicate and refined literary taste of Dr. Hays was developed by his liberal education, although he was by nature fitted to bear more perfect fruit in such a soil than in one which, according to modern ideas of excellence, is filled with the hard facts of physical science. The influence of his severer and mathematical training was exhibited in his acute and very critical judgment which experience sharpened into a sagacious instinct.

After leaving college the predilections of young Hays were for a professional career, but, at the urgent instance of his

father, who desired to initiate him into commercial affairs that he might succeed himself in business, he entered the counting-house where he remained for about a year. This experience did but confirm him in his original preference, and, abandoning commerce, he began the study of medicine with Dr. Nathaniel Chapman, who, throughout his life, retained a lively friendship for his pupil, and more than once influenced the direction of his career. It would be difficult to determine what motives inclined him towards the study of medicine. They may have been quite fortuitous; but the zeal with which he soon afterwards began to cultivate the natural sciences, appears to prove that it was not chance, but a genuine predilection and fitness for the study of nature that made him a physician. In like manner it would seem as if his fondness for mathematical processes determined him to the culture of ophthalmology, the department of medicine in which, above all others, physical methods of observation and mathematical forms of reasoning prevail. He graduated in medicine in 1820, at the University of Pennsylvania, and the subject of his inaugural thesis was "Sympathy"

The earlier years of his professional life were actively devoted to laying a firm foundation for his future position, and so determining its form and proportions that it might thenceforth be developed without his active intervention. It was only at the mature age of thirty-eight years that he was married to Miss Sarah Minis, of Savannah, Ga., who, with four children, survives him. We may venture to believe that this happy union was not without its influence in creating his fondness for domestic life, and perfecting the tranquillity of manner and of mind for which he was so remarkable. No doubt, also, the peacefulness and contentment of his home

had much to do with the diligent and steady performance of the literary work which constantly occupied him. Even in the summer when recreation is generally felt to be essential to health and efficient labor, he was rarely out of town. I well remember that while accompanying him to New York in 1846, as a delegate to the Convention that originated the American Medical Association, he informed me that for twenty years he had never, but once, spent a night outside of Philadelphia for pleasure, and even in subsequent years he was rarely absent from home.

Before offering a sketch of his medical career it may be mentioned that his strong bias towards Natural History was shown by his editing, in 1828, *Wilson's American Ornithology*. There now lies before me a letter to Dr. Hays from his friend Prince Charles Lucien Bonaparte, himself one of the most eminent of ornithologists. It is dated "Off Leghorn, April 9, 1828," and in it the writer thus refers to the new edition of Wilson: "So great is the interest I take in that undertaking that I authorize you (if agreeable to and thought proper by your editorship) to offer in my name to the publishers to conclude this edition with a volume of mine, bringing American ornithology, or rather Wilson's Ornithology, to the order of the day."

In 1831, Dr. Hays read a paper to the American Philosophical Society, in which he described various jaws of the Mastodon Giganteus and the teeth contained in them. "He seems to have been the first writer who clearly pointed out the probability that the number of these teeth was six on each side of each jaw. He says: 'The whole number of teeth possessed by the animal described by Dr. Godman (Tetracaulodon) is, then, at least twenty; and we think that it is at least probable that the animal possessed an interme-

diate tooth between the second tooth with three denticules, and that with four denticules.' 'Should we be correct in our views, this animal possessed three teeth with three denticules in each side of each jaw, making the whole number of teeth twenty-four; but to render this certain would require specimens of intermediate ages to those hitherto described.' These have since been obtained, and have fully confirmed the opinion suggested by the sagacity of Dr. Hays." (*The Mastodon Giganteus of North America.* By John C. Warren, M.D., Boston, 1852.)

The first published medical paper of Dr. Hays appeared as a leading article in the Philadelphia Journal of the Medical and Physical Sciences, in 1826. It is stated to be a "Lecture delivered to the Academy of Natural Sciences, 1823," and its subject was "*The forces by which the blood is circulated.*" It gives a summary of the successive steps in a knowledge of the subject, including the statement of Galen that the arteries conveyed blood; the demonstration of the pulmonary circulation by Servetus and his immediate successors; and the final description of the route of the greater as well as the lesser circulation by Harvey. But neither the illustrious Englishman nor his successors fully solved the problem by what forces the circulation is effected. Even Bichat's declaration is quoted by Dr. Hays, "that when the blood has arrived in the general capillary system it is absolutely beyond the influence of the heart, and still less has the heart any influence on the motion of the blood through the venous system." Moreover, this famous anatomist and physiologist was of the opinion that "the heart is the only power that puts in motion the blood in the arteries, and that these vessels are entirely passive." Dr. Hays expresses regret at being obliged to differ in opinion from so eminent an authority,

but he goes on to argue that "the blood is not circulated by the impulse received from the heart alone, but that its progress is assisted and maintained by a contractile power in the arteries." Among his arguments is the unanswerable one, drawn from his acquaintance with comparative anatomy, "that in fishes where there is no heart but for a pulmonary circulation, the blood must be moved through the body by the impulse of the arterial system alone." In regard to the movement of the blood in the veins he is less clear; but he dwells upon the suction power exerted upon the blood in these vessels by the diastolic action of the right side of the heart and the expansion of the chest in respiration. Like his cotemporaries he overlooked the simple but sufficient fact that the circulatory system is always full, and that a movement of any portion of its contents must urge their whole mass. It may appear strange that only fifty-four years ago so great obscurity should have involved a subject which is now regarded as hardly calling for a special demonstration. But while we may congratulate ourselves on living in the more perfect day of physiological science we should not be unmindful of our debt to those who, even in a humble degree, like the subject of this notice, contributed to establish and disseminate a fundamental truth.

In the same journal, in 1826, and while he was a surgeon to the *Pennsylvania Infirmary for Diseases of the Eye and Ear*, Dr. Hays published "*Observations on Inflammation of the Conjunctiva*," a paper on "*Inflammation of the Sclerotica*," and one on "*The Pathology and Treatment of Iritis.*" These papers, which we have no claim to judge, appear to have laid the foundation of the high repute which Dr. Hays afterwards attained as an ophthalmic surgeon, and probably determined his selection as one of the first surgeons of *Wills Hospital* in

1834. This appointment secured to him a larger field for observation and experience, and led to the distinguished position which he afterwards occupied among the ophthalmologists of this country. Indeed, no one in Philadelphia enjoyed a higher reputation for skill in this branch of surgery, and from all parts of the United States patients sought the benefit of his counsel and operative skill. In those days neither ophthalmology, nor indeed any branch of surgery, rested upon a well-defined scientific basis; and in this country, as in Europe, surgeons were regarded by physicians as something less than equals. Perhaps no other department of surgery has more rapidly or more securely advanced since then than that to which diseases of the eye belong; and if we must, in the light of existing knowledge, regard the writings of that period as crude and unscientific, and the operative methods as defective, we cannot refuse to those who used them with the judgment and dexterity of Dr. Hays, the admiration with which their cotemporaries also regarded them.

The knowledge acquired by Dr. Hays through study and practice he embodied in several publications, the first of which was the *Practice of Medicine*, of Dr. Dewees, for which he prepared the chapter on *Diseases of the Eye*. This work was published in 1830, and in its preface the author alludes to the contribution of "his friend, Dr. Hays, whose long and attentive study of the subject, together with his experience in this branch of practical medicine, has amply fitted him for the work." The chapter, in about seventy 8vo pages, contains a succinct account of the anatomy, physiology, and pathology of the organ of vision, and of the treatment of its diseases, which is certainly not the least meritorious in the work, although, like other cotemporary essays on similar

subjects, it cannot be judged by the standards of the present day.

In 1843, Dr. Hays edited an American edition of Lawrence's treatise on *Diseases of the Eye.* In a letter of the author to the editor acknowledging a copy of the volume the following passage occurs: "I return you my best thanks for the book, and at the same time beg to express to you how highly I am gratified at finding that you not only think my work worthy of republication in America, but that you should have condescended to act as editor, and to enrich my treatise with those valuable additions which might well have constituted a separate publication. I feel that I could not have received a higher compliment, and I shall always hold the circumstance in gratifying remembrance." In 1854, on receiving a copy of the third edition, Sir William wrote again to the editor a letter of thanks from which the following is an extract: "I feel it a particularly fortunate circumstance that one so thoroughly conversant with the whole subject, and so used to literary composition, should have undertaken the troublesome task of making these additions to my treatise, published in 1840, which are necessary to bring it up to the present state of knowledge, and should have conferred upon it the new and interesting feature of so many beautifully executed pictorial illustrations." The preparation of the successive editions of this work was to Dr. Hays a labor of love, for by it he not only associated his own name with that of perhaps the most eminent ophthalmic surgeon in England, with his consent and also high approbation, but it gave him the opportunity, as he himself says in the preface to the second edition, of presenting the results of his own experience "derived from more than a quarter of a century's devotion to the subject, during which period he had been attached to some public

institution for the treatment of diseases of the eye." In the third edition of the work, issued in 1854, Dr. Hays recorded the first case of astigmatism published in America. Donders, in his treatise on "Anomalies of Refraction and Accommodation," cites in historical order the earliest published cases of astigmatism. They are five in number, and of these three occurred in the persons of their reporters, the fourth is due to Dr. Hamilton, and the fifth to Dr. Hays. He was also the first, it is believed, to observe color-blindness as a pathological condition; it being generally a congenital defect. (See case of Mary Bishop, *Amer. Journ. of Med. Sci.*, Aug. 1840, p. 277.) This case ended in recovery. It is cited by Dr. B. Joy Jeffries in his recent work on *Color-Blindness.*

The bent of Dr. Hays' mind towards the physical departments of medicine is illustrated not only by his special devotion to ophthalmology but by the total absence from all his writings of theoretical discussions. Doubtless the same inclination determined him to edit Arnott's *Elements of Physics*, in order that students and practitioners of medicine might become better acquainted with the physical phenomena of life. This work, which was first published in 1829, exerted a marked influence upon medical instruction while it was passing through three successive editions. Two years later, along with his life-long friend, Dr. Robert Eglesfeld Griffith, he translated the famous *Chronic Phlegmasiæ* of Broussais, and, after a like interval, *The Principles of Physiological Medicine* of the same author. He was, perhaps, moved thereto by the semblance of simplicity and precision which distinguished the writings of this celebrated theorist, whose influence was distinctly marked on the opinions and practice of many American physicians, among whom the Professor of the Institutes of Medicine in the University of

Pennsylvania, Dr. Samuel Jackson, was the most eminent and influential. If they attracted Dr. Hays by their seemingly logical character, they captivated the versatile imagination of Dr. Jackson by the fervor of their eloquence and their all-embracing generalizations. They are now utterly forgotten, although at one time they formed the law and the gospel of the medical profession on both sides of the Atlantic; and their fate remains as a monument of warning to all who would attempt to construct science out of materials furnished by the imagination.

The *American Cyclopædia of Practical Medicine and Surgery*, of which only two volumes were completed, comprised titles from "A" to "Azygos," and was produced under the editorship of Dr. Hays between 1834 and 1836. It everywhere exhibits signs of his painstaking supervision, and contains, of his own, besides innumerable brief articles, a great many bibliographical additions to the essays of his collaborators. He contributed to it a large proportion of the article *Abdomen*, including its symptomatology and pathology, its abscesses, fistulæ, adhesions, tumors, pulsations, etc.; the whole of the article *Abstinence*, covering ten pages in double columns; *Amaurosis*, occupying fifteen pages; *Aphlexia*, or *Revery*, three pages, etc. The list of collaborators he secured included many of the foremost medical men of the time, including Bache, Chapman, Reynell Coates, Condie, Dewees, Dunglison, Emerson, Griffith, Thomas Harris, Hodge, Horner, Jackson, Mitchell, Robert Patterson, and Wood, of Philadelphia, Geddings, of Baltimore, and Warren, of Boston, every one of whom, except Dr. Coates, he survived. Dr. Hays was admirably fitted for editing such a work. His knowledge of the medical profession enabled him to select the most competent collaborators; his courtesy combined with firmness

secured their cordial co-operation; his critical judgment assured the desirable harmony of opinions and unity of method among them; and it can scarcely be doubted that the Cyclopædia would have been carried to its completion by the editor and publishers, and have become a lasting monument to the attainments of the profession at that day, if it had not been smothered in its infancy by the country that should have fostered it. To-day, as nearly half a century ago, the class of our citizens which is least protected or encouraged is that which provides the intellectual, that is the highest, elements of civilization. From time to time encyclopædic works have been issued in this country, but, with one or two exceptions, they have been reprints or translations of foreign books for which legal, if not legitimate, protection has been secured through the pious fraud of a putative American father who had little to do with the generation of the affiliated work. No doubt the failure of his great literary project continued to rankle in Dr. Hays' mind, and to animate his feelings against the irrational policy which our national government has pursued towards nearly all the higher forms of intellectual culture when not prosecuted directly by its own officers.

The history of Dr. Hays' connection with the *American Journal of the Medical Sciences*, which proved to be the most important event in his professional life, was not an accidental occurrence, nor was his selection by the editors and publishers of that periodical an experiment. Mr. Isaac Lea was a member of the historic publishing house of Carey, Lea, & Carey, and still survives at a patriarchal age with senses and intellect unimpaired, and with that fresh and lively temperament which always distinguished him. He was also an active member of the Academy of the Natural Sciences

to which Dr. Robert E. Griffith likewise belonged. The latter was a very intimate friend of Dr. Hays, and introduced him, in 1818, into the Academy, where he was soon made a member and chairman of its Publishing Committee. In this office he was earnest and indefatigable, and by his great industry and tact he procured the publication of no less than fifty-six numbers of the Society's Journal. The active management of the Society then passed into other hands, and its Journal was suspended for many years. In 1827 Mr. Lea became a member of the *American Philosophical Society*, and was soon afterwards made chairman of its Committee of Publication, to which Dr. Hays, who entered the Society in 1830, was subsequently added. During all this period, as ever afterwards, Mr. Lea and Dr. Hays were united in a close friendship by harmony of character and a community of scientific pursuits. It was therefore natural, when the medical journal issuing from the publishing house of the former was in need of additional editorial ability, that he should gladly sanction the selection, as editor, of Dr. Hays, whose special qualifications he so well knew. The Journal at that time bore the title of the "*Philadelphia Journal of the Medical and Physical Sciences.*" It was commenced in 1820, with Dr. Chapman as editor, and in 1825 Drs. Dewees and Godman were associated with him in that office. But, in the following year, Dr. Godman having accepted the professorship of anatomy in Rutgers Medical College, New York, and the senior editors, owing to increasing business, being unable to devote their time to its interests, it became necessary that another editor should be selected. The long intimacy of Dr. Hays with Chapman and Dewees, and the community of tastes between him and Godman, seemed naturally to designate him as their associate. From New

York Godman continued, as long as his engrossing duties and failing health would permit, to contribute to the Journal; but at last, finding that he could no longer do so, he withdrew from any active share in its conduct, which then devolved upon Dr. Hays alone. But he did not retire until he had prepared an announcement which, although it was not published in full, should here be cited in proof of the high estimate which Godman had formed of the subject of this memoir. It was as follows:—

"The Publishers, with the entire approbation of the Editors, announce with pleasure that they have secured the valuable assistance of Isaac Hays, M.D., who will henceforth co-operate in conducting the Journal. Independent of this gentleman's practical experience and zealous devotion to the interest and honor of the profession, we consider him as a great acquisition, on account of his long experience and well-earned reputation in the management of such a publication. The Journal of the Academy of Natural Sciences owes a very large portion of its success to his exertions and attention to the business of its publication. In adding him to the editors we give an ample pledge of our determination to make every effort to merit a continuance of the liberal support it has uniformly received."

On the cover, then, of the second number of the thirteenth volume of the "Philadelphia Journal," published in February, 1826, the name of Dr. Hays appears as one of the editors. By the close of the year, all his associates having retired, the responsibility of conducting it devolved upon him alone. Immediately he laid aside its local for a national name, and in its management, as the *American Journal of the Medical Sciences*, in November, 1827, gave it that cosmopolitan character which has constantly become more perfect, and which was never tarnished by his negligence or in-

discretion during the fifty-three years that elapsed between its birth and his own death. Looking back over this long period of time, every one acquainted with the Journal must admit that it honestly and thoroughly fulfilled its object, which was declared to be "to establish a National work devoted exclusively to the improvement of medical science, and to the elevation of the dignity and character of the profession, to the entire rejection of all local and individual interests and party views." We cannot refrain from quoting in this place the accurate and striking terms which were used to describe the Journal by Dr. Billings, in his Centennial History of American Medical Literature. "The ninety-seven volumes of this Journal need no eulogy. They contain many original papers of the highest value; nearly all the real criticisms and reviews that we possess; and such carefully prepared summaries of the progress of medical science, and abstracts and notices of foreign works, that from this file alone, were all other productions of the press for the last fifty years destroyed, it would be possible to reproduce the great majority of the real contributions of the world to medical science during that period."

Although from 1869 Dr. Hays was aided by his son, Dr. I. Minis Hays, whom he thus trained to the responsible duties which he now discharges alone, he never abandoned his supervision of the Journal, nor abated his interest in it, and it survives not only as a monument to his steadfast industry, but is, we believe, without a parallel in the length of time for which one man has conducted a periodical publication.

The career of Dr. Hays, as thus far sketched, is a striking illustration of the truth that each one's place in life is generally determined by himself. It is often remarked that a man's first steps towards eminence are directed by some acci-

dent without whose occurrence lives that have been eminent and brilliant might have been passed in obscurity. History is full of instances which are accepted as illustrations of this superstition, and are too often invoked by the indolent as a sufficient reason, or even as an apology, for their own inaction. They seem to say, "If Fate will have me king, why, Fate must crown me without my stir." But no such waiters upon Providence ever achieved the honorable distinction, which, on the contrary, has generally been reached by those who deliberately and faithfully prepared themselves for their high office, and who added to their fitness for its duties their conspicuous presence in the world and the support of influential friends. The precise position one shall take may be uncertain, it may even seem to be determined by accident, but "There's a divinity that shapes our ends, rough-hew them how we will." Beyond a doubt men fall into their fitting place as certainly as the particles adapted to form a crystal come together to produce their destined form. And thus it was that all the peculiar elements of Dr. Hays' character, and his social, professional, scientific, and literary relations, combined to fit him for the duties of his life's office and to raise him to it in the fulness of time.

The gravity and dignity of the quarterly journal unfitted it for the discussion of subjects which concerned the medical profession as distinguished from the science and art of medicine. For this purpose the *Medical News* was established in 1843 as a monthly journal which kept physicians informed of all that transpired of general interest in the various medical societies and colleges of the country, and especially of everything that tended to advance or retard the paramount cause of medical education. A portion of its columns was also devoted to exposing the evils and iniquities of quackery

both at home and abroad. In pursuit of the latter object, once, and only once, did Dr. Hays find himself called upon to answer for the maintenance of the truth. In 1846 a suit was brought against him, by the author of a quack remedy, for having declared in the *Medical News* that the pamphlet describing this medicine, "displays quackery in its most unblushing and undisguised form." The case was tried in the Nisi Prius branch of the Supreme Court of this State, before Judge Burnside. It is memorable for the professional interest it excited, for the wit and humor of the Judge, for the display of adroitness and eloquence by the plaintiff's advocate, the late David Paul Brown, and for the verdict of the jury which sustained the criticism of Dr. Hays by awarding merely nominal damages to his assailant. The *Bulletin of Medical Science*, edited by the late Dr. John Bell, commented on the case in the following language: "We must not let the present opportunity pass without recording the obligations under which the profession lies to Dr. Hays for his continued exposure of quackery and medical delusions." In this exposure he persisted to the end of his life; not by denunciation or the use of bitter epithets, which the subject certainly prompted and warranted, but by simple narratives of facts. Within the medical profession the faithful were encouraged by these publications, and it may be believed that the weaker brethren, who from imperfect education or the temptations of gain were in danger of being seduced into error or crime, were sometimes held to their moorings by the reiterated exposures of fraud, and the records of its punishment. It is even possible that this influence was radiated and reflected in some degree upon the general public; for, however small and incapable of accurate measurement that influence may be, its existence and its power cannot be doubted.

Dr. Hays was never a lecturer upon any branch of medicine. That he was not resulted only from an accidental occurrence. There lies before me a printed circular of the "Philadelphia Anatomical Rooms," which were in College Avenue, now called Chant Street, announcing a course of lectures during the winter months by Dr. Godman, on Anatomy and Operative Surgery; by Dr. Griffith, on Materia Medica and Medical Jurisprudence; by Mr. Keating, on Chemistry; and by Dr. Hays, on Practice of Medicine and Diseases of the Eye and Ear. The lecture rooms in which this course was to be delivered had already acquired a local celebrity through the lectures of Lawrance and of Godman, which was destined to be maintained by a long line of teachers who were there trained to become professors in the medical schools. It is said that Dr. Hays was appointed to deliver the introductory lecture of the course, which, however, was never given, in consequence probably of the removal of Dr. Godman to New York. Thus Dr. Hays not only lost an opportunity of overcoming the natural diffidence which restrained him from taking the part in public discussions which his merit entitled him to, but also of becoming what he was eminently fitted to be, one of the most accurate and thorough teachers of his day. It is probable that he withdrew from this career lest it might interfere with a proper discharge of the duties of the editorial office he soon afterwards accepted.

The participation of Dr. Hays in the organization of the American Medical Association was doubtless prompted by the same spirit which led him on every fitting occasion to aid the efforts of individuals or societies to improve the culture of his profession. It has already been stated that the *Medical News* was constant in this purpose, and contained, in

almost every issue at times, whatever could be gathered at home or abroad which denoted either the striving of individuals after a better system of education or the action of societies in favor of greater strictness in teaching and licensing. Addresses upon education (and they never failed, for the subject was practically inexhaustible) were sure to contribute their most telling paragraphs to these columns when they clamored for reform; and not a few who advocated the least possible education as the best possible preparation for a medical career, found their base and treasonable platitudes pilloried with a quiet scorn that we may believe cut more deeply than any invective however crushing, or the sting of any wit however keen.

In 1846 this subject was more than ever the order of the day, and Dr. Hays was sent by the Philadelphia Medical Society as a delegate to the Convention, which was held in New York City, at the call of the Medical Society of the State of New York. He took an active part in its proceedings, and was a member of the committee appointed to "bring the subject of medical education before the Convention." In that capacity it was he who presented the resolutions which proposed to create "a National Medical Association;" to adopt "a uniform and elevated standard of requirements for the degree of M. D.;" that "young men before being received as students of medicine should have acquired a suitable preliminary education;" and that "it is expedient that the medical profession in the United States should be governed by the same code of medical ethics."[1]

[1] The following account of the origin of these resolutions is contained in a manuscript of Dr. Hays: "The idea of taking advantage of that occasion to form a National Medical Association is due, I have reason to believe, to Dr. A. Stillé, of Philadelphia. He consulted one of his colleagues [Dr.

These subjects were assigned to several committees, Dr. Hays being a member of that appointed to prepare a Code of Medical Ethics. At the meeting held in the following year at Philadelphia he presented the Code, which has ever since been recognized as the ethical guide of the medical profession in this country.

When the Plan of Organization of the American Medical Association was under consideration by that Convention, Dr. Hays, in common with some others, feared that a merely representative and therefore transient body would be unfitted to inspire respect for its dignity and authority, or to make any steady progress in scientific or practical knowledge. He, therefore, proposed that the Association or Society should be composed solely of members elected directly by it or through its council, and that this council should be a permanent body, but renewable in part every year, and charged with the "general superintendence of the concerns and publications of the Association." The suggestions of Dr. Hays did not, however, suit the views of the greater number of the delegates. The Convention, as is well known, adopted the popular system, according to which representation and membership in the Association became dependent much more upon personal popularity than upon professional merit or distinc-

Hays] in regard to a series of resolutions which he had prepared to offer for the consideration of the Convention; but as no opportunity for his offering them had presented itself, so great was the disorder on the first day of the meeting, a colleague [Dr. Hays], who had been appointed one of a committee to prepare business for the next day, asked to be allowed to bring them before that committee and try to obtain the recommendation of the passage of those resolutions. With some difficulty this was obtained, and the resolutions adopted by the Convention were substantially the same as those prepared by Prof. Stillé."

tion; and the custom was maintained of discussing subjects of every kind at the general meetings, until at last the latter evil became intolerable, and a Judicial Council was created to which "all questions of an ethical or judicial character" were referred. By adopting this law the Association tardily, and still imperfectly, accomplished the object aimed at by Dr. Hays in the beginning; and its failure to accept the other and more radical principle would seem in part to explain the want of interest in it shown for many years past by the more cultivated members of the profession, and especially by the medical colleges, ever since they were ostracized by the Association. We have often heard Dr. Hays deplore these original defects and these later tendencies of our National Medical Congress, which he considered as having lowered its original dignity and lessened the amount of scientific work it was at one time expected to accomplish.

It may not be generally known that the original and continued publication of the Transactions of the Association in Philadelphia was due entirely to Dr. Hays, whose editorial experience and intimate relations with the chief medical publishers of the country gave him peculiar advantages in printing and distributing the volumes. He continued to be the Chairman of the Committee of Publication for five years.

As a Fellow of this College, Dr. Hays always displayed a lively interest in its welfare. He was chairman of the committee to which the erection of the present Hall of the College was entrusted, and was constant and unwearied in superintending its progress. He felt a special interest in the library, which he regarded as the most permanent and influential agency at the command of the College for developing a love of knowledge among its Fellows, and, through them, in the profession at large. His gifts of books from time to time

entitled him to the thanks of the College, and to the inscription of his name upon the honorable roll of its benefactors. Among the contingent bequests in his last will, that to the College for the use of its library takes precedence of the others. It marks the interest felt in the institution by our deceased Fellow, and adds another to the many motives which we have to cherish and respect his memory.

It will be proper in this place, and before adverting to the more personal relations of Dr. Hays, to enumerate the various public offices that he filled, and the honorary distinctions he received.

In 1818 he became a member of the Academy of Natural Sciences of Philadelphia; in 1865 was elected its President, and re-elected until 1869, when advancing years obliged him to decline a re-election. He had been also a Curator and member of the Library and Publication Committees.

In 1830 he was chosen a member of the American Philosophical Society, of whose publication committee he was also a member, as well as a Councillor and one of the Trustees of its Building Fund at the time of his death.

He was for many years an active member of the Franklin Institute of this city, in which he was successively Manager, Corresponding Secretary, Chairman of the Library Committee, and Chairman of the Committee of Publication.

He was also a director of the Musical Fund Society; member of the American Academy of Arts and Sciences; honorary member of the Historical Society of Georgia; corresponding member of the National Institution for the Promotion of Science, established at Washington, D. C.; of the Montreal Mechanics' Institution; and of the Royal Society of Northern Antiquarians, Copenhagen. He was also a manager of the

Society of the Alumni of the University of Pennsylvania, Department of Arts and Science.

The medical institutions with which Dr. Hays was connected were the following:—

From 1822 to 1827 he was a surgeon to the Infirmary for Diseases of the Eye and Ear; and from 1834 to 1854 surgeon to Wills (Ophthalmic) Hospital; he was also physician to the Philadelphia Orphans' Asylum; Philadelphia Dispensary; Southern Dispensary; and Pennsylvania Institution for the Instruction of the Blind.

In 1832 he was chairman of a Medical Committee created by the Board of Health of this city to examine into the facts relating to the epidemic cholera.

In 1835 Dr. Hays became a Fellow of the College of Physicians of Philadelphia, and served it as chairman of its building committee, as Censor, and as one of its delegates to the American Medical Association from 1849 to 1853.

In 1847 he was elected treasurer of the Convention out of which grew the American Medical Association, and was annually made treasurer of the latter from 1848 to 1852, when he declined being again a candidate for the office. He was chairman of the Committee of Publication from 1847 to 1853. In 1852 he acted as chairman of a special committee on amendments to the constitution; and, in 1853, of a committee on plans for organizing State and County Medical Societies. In 1854 he was chairman of the committee on prize essays, and, in 1855, chairman of the committee of arrangements for the meeting held in Philadelphia.

In 1848 Dr. Hays was a delegate from the College of Physicians of Philadelphia to the Convention held in April of that year for organizing the Medical Society of the State of

Pennsylvania. He was chairman of the committee which drafted the constitution of the latter society, of which, in 1849, he was elected the corresponding secretary; and from 1850 to 1854 he was a delegate from the Philadelphia County Society to the State Medical Society.

Dr. Hays was also a member, and in 1825 was elected secretary, of the Καππα Λαμβδα Society of Philadelphia; a Vice-President of the Society of the Alumni of the Medical Department of the University of Pennsylvania; the first President of the Ophthalmological Society of Philadelphia; a corresponding member of the Gynæcological Society of Boston; an honorary member of the American Ophthalmological Society; of the State Medical Societies of New York and Rhode Island; of the Academy of Medicine of Abington, Va.; and of the Medical Society of Baltimore; and a corresponding member of the Medical Society of Hamburgh; of the Société Universelle d'Ophthalmologie; and of the Congrès Médicale Internationale de Paris.

Having sketched the career of Dr. Hays in its more public and professional aspects, it remains for me to present some of the traits that distinguished his social relations. It has already been stated that he was the private pupil of Dr. Nathaniel Chapman, and it may be added that to the end of his life the interest of the teacher in his pupil was unabated. Dr. Hays was frequently employed by him to attend his patients, and, during the last illness of his old preceptor, was his medical attendant. He held similar responsible and confidential relations with Dewees, between whom and himself there existed a warm sympathy to which their fondness for music and painting probably conduced; and, at one time, if Dr. Hays had desired to cultivate obstetrics, the door of a

lucrative practice would have been opened to him by Dewees. Very similar were the ties that bound him to Dr. Jackson during a long period. It is well known that this eminent physician and eloquent teacher was, for many years before his death, confined to his chamber, which almost until the end was brightened by his cheerful manner and the lively interest he showed in every subject of public and professional concern. At least once a week Dr. Hays was his welcome guest, and no doubt his visitor's gentle and subdued tone and deliberate judgment exerted a calming influence upon the friend whose impetuous enthusiasm and animated manner often needed a soothing rather than a stimulating influence. At Dr. Jackson's death it was found that he had bequeathed to Dr. Hays one thousand dollars as a token of his esteem. Throughout his life Dr. Hays seems to have enjoyed the intimate friendship of an unusually large number of distinguished men, and to have preserved it with singular constancy, a fact as honorable to him as to them, and tending to illustrate the sterling quality of his character. It is the more remarkable because such intimacies are rare among men of the same profession, and especially so among physicians. But his fondness for natural science also brought him into close contact with some of the most eminent cultivators of that branch of knowledge. His relations with Mr. Isaac Lea and Prince Charles Lucien Bonaparte have been elsewhere mentioned, and it may now be added that among his most intimate and cordial friends were Thomas Say and George Ord, whose fame is indissolubly associated with the natural history of the United States.

His social position and his active membership of the Philosophical Society made him a frequent guest at the Wistar Parties while he was still comparatively young, and subse-

quently, in 1844, led to his being enrolled in that association, which was composed exclusively of members of the Philosophical Society. At its social meetings, which were held every Saturday evening during the winter, were assembled most of the gentlemen of the city who were distinguished in science, literature, art, or general culture, as well as eminent strangers sojourning in Philadelphia. Here Dr. Hays was always a pleased and welcome guest, for he delighted to converse upon intellectual topics with men whose professional or social rank gave interest or weight to their opinions, while his own abundant information, his affable yet modest tone, as free from dogmatism or from pedantry as from flippancy, and his perfect exemption from any suspicion of selfish objects, made him a desirable companion for men of all parties and shades of opinion. When the civil war broke out, which absorbed the interest and activity of every citizen, and was destined to break asunder so many social ties, and alienate so many life-long friends, the Wistar Party no longer interested its members as in the days of prosperity and peace, and several among them being out of sympathy with the greater number, its meetings gradually declined and were at last suspended. They have never been resumed.

For several years, however, before this catastrophe, Dr. Hays conceived that such social meetings were too useful as well as agreeable to be confined to the winter months, and, accordingly, in concert with several friends, he organized the "*Saturday Evening Club*," which met, except in midsummer, between spring and autumn. Its entertainments were simple, the number of the guests limited, and the members, not being all physicians, the subjects of conversation were of more general interest than they would have been among

persons of one profession only.[1] But this assoeiation, like the Wistar Party, gradually declined, and died through the operation of causes like those which terminated the eareer of the latter. Its founder, we may believe, reeognized, with many others, that the medical profession in this eity had completed its longest and one of its most notable eycles, and that henceforth the antique sense of honor and dignity which had so long distinguished it must give way to more tangible and perhaps eoarser motives of aetion. Dr. Hays, as well as many others who had lived in both epochs of our history, eould not doubt that the eivil war, which had erushed so many of the amenities of life, had infused a more robust vigor into every braneh of society, and that henceforth all the departments of our civilization had entered upon a new era. Of this no clearer demonstration can be found than the recent history of medieal literature in the United States, and no more eertain indication of it than in the rapid and vigorous development of the quarterly medical journal whieh he founded. No doubt he was too wise to believe that any soeial institutions possess the seeret of immortality; and therefore he eould rejoiee in events that set the final seal on the independenee of American thought and deed, however rudely they may have shaken the accumulated habits and prejudiees of several generations, and impaired those gentle and almost family ties which the edueated physieians of this eity had been aceustomed to regard as inseparable from their professional life.

[1] The list of members included Mr. Isaac Lea, Prof. H. Coppée, Mr. Samuel Powel, Drs. G. B. Wood, G. W. Norris, J. Carson, F. Bache, R. LaRoche, R. E. Rogers, T. Stewardson, S. H. Dickson, I. Hays, and A. Stillé.

In attempting to form an estimate of Dr. Hays' character we must allude to a very striking, if not the greatest, peculiarity it presented. It was well balanced. In nothing did he err by excess or by impulse. As his walk was measured and his conversation grave, although he was the opposite of indolent or dull, so the structure of his mind was remarkable for a due proportion and equilibrium of the reflective faculties which passion never overthrew and but seldom disturbed. In public assemblies as in private conversation he was always calm and as self-possessed as his modesty and aversion to disputation would permit. He neither achieved nor was ambitious of oratorical success, but whatever he was called upon to say went directly to the point, was tersely and correctly expressed, and impressed his hearers with a conviction not only of the sincerity, but also of the weight, of his opinions.

With a taste naturally delicate, and refined by culture and a long study of modes of thought and expression, he became very fastidious in regard to style. A verbose and declamatory manner in speaking or writing was supremely distasteful to him, and sometimes, perhaps, led him to undervalue men of substantial merit whose defective training or exuberant imagination tempted them to step beyond the boundaries of moderation and good taste. This rigor of judgment, however, was not the result of his refinement and culture alone; it was due, in part, to a certain peculiarity of character which may perhaps be described as a deficiency of imagination and enthusiasm, as compared with the deliberative faculties. A careful examination of his writings, so far as I have been able to make it, seems to reveal this characteristic; for while his narratives or criticisms are remarkable for the lucid arrangement of appropriate thoughts, they

are never colored vividly, and are rather deficient even in contrasts of light and shade. The Ciceronian rule, "Est oratoris proprium, apte, distincte, ornate dicere," he, indeed, obeyed so far as to write and speak appropriately and clearly, but his genius was not to write eloquently. He lacked the *perfervidum ingenium* which inspires "thoughts that breathe and words that burn." And well, no doubt, that it was so. The duties of an editor, which he fulfilled with such remarkable distinction, demand far different qualities; an enlightened, unbiassed, and deliberate judgment, a suavity of manner that invites confidence, and a firmness that is proof equally against the cajoleries of designing flattery and the exactions of overweening self-esteem, the dictation of ill-advised counsellors, and the injustice of hostile criticism. Such influences neither disturbed the serenity of his feelings, nor warped the rectitude of his judgment, nor turned him from the straight path of duty. What he felt obliged to do, that he did; not rashly nor even impulsively, nor with the zeal that is blind to the right of judgment in others, and to the truth so often proved by example that errors may be propagated fanatically by men who are honest in their convictions and aims.

It is perhaps almost without example that a leading medical periodical for more than half a century should never have been known as the organ of a party, and never contained an editorial line that betrayed personal animosity. Even the *Medical News*, which afforded a ready field for the display of such feelings, never exhibited them during the thirty years that he conducted it—not even at times when there was sufficient ground in the notorious misconduct of others to justify severe criticism or even moral reprobation. This peculiarity, so rare in the history of journalism, was determined neither by laxity of principles nor indifference: for no man ever lived

who had a higher standard of moral right, or who felt more keenly the attacks of others upon himself or upon the cause that he was serving, or was more decided in his judgment of measures and of men. It was the result of his instinct of justice which always separated the individual from his act, and which led him while he condemned the latter to keep the former out of sight. He carried this principle even into his personal relations with men. It is remarkable that although he long held an office which is generally supposed to be more prolific of enmities than any other, he had very few personal enemies, and there were fewer still whom he held to be such without sufficient cause. For them his aversion was deep, but not loud. He indulged in no invectives against them, even when he spoke of them most severely; he would admit the good even while denouncing the evil that was in them, yet he seldom mitigated, still less reversed, a judgment he had once deliberately formed. A mean, a dishonest, a disloyal action stamped its author in his mind with perpetual reprobation; but his dignity of character did not allow him to become a public prosecutor or a private executioner. In all allusions to men guilty of such deeds, or even to those whose general course or character he did not approve, he usually limited himself to the bare fact which he had to announce, unqualified by any opinion favorable or unfavorable. He would not condescend to the unmanly act of "damning with faint praise," nor would he covertly attempt to damage those whom he did not care to attack openly. He was a man of peace; and not regarding the triumphant issue of any personal conflict as important as a quiet life, he was neither apt to take offence nor prompt to resent it, except by a dignified and expressive silence. It would even be easy to prove that he was capable of taking

the noblest revenge, by doing a substantial good in return for what he regarded as a malevolent injury.

Although the weight of fourscore years rested upon him, and occasional indispositions confined him to the house, Dr. Hays continued to show a lively interest in public and professional affairs even to the very verge of his life. Of this the following incident offers a striking illustration. About two months before his death, while reading the *Boston Medical and Surgical Journal* for Feb. 6, 1879, his attention was arrested by a statement attributed to the late eminent and venerable Dr. Jacob Bigelow of that city, who graduated in 1810 at the University of Pennsylvania. After some allusion to several other professors, he is represented to have said: "Physick was a savage, and would have no intercourse with us. We never were allowed to enter his house." Painfully impressed by so erroneous a description, Dr. Hays felt bound to correct it, and he began to write a letter to the gentleman from whom it proceeded, which is interesting, not only as a vindication of the "Father of American Surgery," but also as a proof that age had not dimmed its author's memory nor chilled his sense of justice. It is also of interest as being the last writing that Dr. Hays ever penned, sickness having overtaken him before he had finished it, and it deserves to be preserved, if only to show that the end of his life was in perfect harmony with his whole career.

My Dear Dr. Bowditch: I have read with deep interest your account published in a recent No. of the *Boston Medical and Surgical Journal* of an interview with the late Dr. Bigelow when ninety years of age. I yield to no man in my esteem, respect, and high estimate of the judgment and extensive attainments and noble moral qualities of Dr. B., to whom I am indebted for many kindnesses; but justice to Dr. Physick, with whom I was

well acquainted, compels me to say that Dr. B.'s estimate of Dr. Physick was a hasty one and altogether erroneous. He was not "a savage"—on the contrary he was one of the kindest hearted men. He had a skeleton in his closet which depressed his spirits and rendered him shy of company and reserved with strangers, but it was said of him that he never performed a painful operation, but that he had to go to bed on reaching home, sick, so sensitive was he to the infliction of pain. He had observed that persons fatally scalded seemed to suffer no pain, and he gave orders that every oyster should be dropped in boiling water, before being cooked for him, and he would not eat them unless so prepared. The last operation I witnessed with him was performed by his son-in-law, Dr. Randolph, for excision of the entire lower jaw. When the jaw was removed and the bloody flap laid on the neck, the sight was appalling. I held the ligatures to hand to Dr. Physick who was to tie them; after applying one or two he was so overcome that he beckoned to me to apply them, turned his back to the patient and walked about the room in great agitation. . . . .

Even in the closing period of his long life the thoughts and affections of Dr. Hays turned most of all to the journal with which his name and fame were inseparably associated. While the silver cord was loosening that bound him to this almost life-long companion, he doubtless felt a natural pride that his name would survive with it in the person of his son, and we cannot but think that this reflection cheered the twilight of his life. For to the very last his mind was unclouded and his feelings were not blunted. In the month of February, 1879, he suffered an attack of influenza followed by exhaustion from which he did not rally, and, unable to take food, for which he felt no desire, he gradually fell asleep on the 12th of April, 1879. His work was completed, and, full of years, he passed away, almost the last representa-

tive in the medical profession of the generation to which he belonged.

Nearly fifty years ago I began to know him as the preceptor of one of my most intimate friends. He then lived at the N. E. corner of Eighth and Sansom Streets, and I well remember the impression his gentle and courteous manner made upon me, and the wonder mixed with envy with which the well-filled shelves of his library inspired me. In the street he walked with deliberate steps, often with his hands behind his back and his eyes bent upon the ground, and this gravity of carriage, which, however, had nothing chilling or austere in it, never deserted him. It perhaps did not invite intimacy; for the vulgar familiarity of recent generations was repugnant to him. Yet it formed no absolute barrier against any whose character or station deserved respect. His nearer friends were a distinguished circle composed chiefly of men who were something more than physicians by their general culture or their addiction to natural science. With some of these his relations were intimate, and continued as long as life lasted. They were all men of mark and character whose friendship conferred honor. That he retained it so long, and in so many instances, may be ascribed to the singular equanimity which prevented him from either giving or taking affront gratuitously. For although neither insensible nor cold he had great power of self-control, and seldom exhibited active emotion or vehemence of manner. Such indeed was the character a physiognomist would have read in his face, where the calm, honest look of the eyes harmonized perfectly with the habitual repose of all the features. But what he practised and loved he also exacted from others. Whatever might be the ties that bound him to a man, a corrupt or dishonest action severed them at once and forever. By birth a

Hebrew, he through life adhered to the ancient faith; but while fixed in his own views he was entirely liberal to those of others, often quoting Pope's lines:—

> "For modes of faith let graceless zealots fight;
> His can't be wrong whose life is in the right."

To such a man, so industrious, zealous, steadfast, wise, and pure, whose long life had been devoted to promoting the noblest of sciences and most beneficent of arts, and cleansing them from the blight of ignorance and the stain of falsehood, its decline is the peaceful coming of the night's repose, its natural and necessary ending, as free from terror as from regret; and we cannot doubt that, apart from the sadness of quitting those who had been the joy and consolation of his home, he clung most fondly at the last to that work which he had reared as the fittest monument to perpetuate his memory.

MEMOIR

OF

JOHN MARSHALL PAUL, M.D.,

OF BELVIDERE, N. J.

By

EDWARD SHIPPEN, M.D., U.S.N.

[Read March 3, 1880.]

The story of a long and well-spent life, even if uneventful, often affords encouragement to many who are endeavoring to do good in their day and generation; and it is for this reason that I desire to present a very short notice of a deceased Fellow, who, in the writer's belief, eminently deserved the name of the "Good Physician."

In the last list of its Fellows published by the College of Physicians, but two show an earlier date than Dr. John Marshall Paul, who became a member of this body in 1835. Since the publication of that list Dr. Paul has passed away, at the ripe age of eighty. He had for so many years been a non-resident Fellow, that few, probably, of the present generation of medical men have any personal knowledge of him. He was formerly, however, not only an active and respected member of this body, but he also occupied an excellent position as a practitioner in our city. The writer knew him for very many years, with an ever-increasing admiration for him in all the relations of life; more especially as a model of a philosophic, benevolent, and accomplished physician,

who, though retired from the toils and struggles of the profession, kept himself always abreast of its literature and practice to the very end of his long life.

Dr. Marshall Paul was the son of Thomas Paul, of Belvidere, N. J., and was born in that place on January 2, 1800. After an excellent academic education he came to Philadelphia, and entered the office of Dr. Parrish, the preceptor of so many worthy physicians, and graduated in the medical department of the University of Pennsylvania, after a conscientious application to his studies, and having already had some experience as a substitute in the Pennsylvania Hospital. After graduating in the spring of 1824, he went (in company with his relative, Dr. John Rodman Paul, so long the Treasurer of the College) to Europe, with a view of pursuing his professional studies. Two years were spent there, principally in Paris. His natural ardor led him to do that which he came for with his whole heart; and he returned well-grounded in his profession and accomplished in a thorough knowledge of the French language, which was not so very common at that day. He at once settled down for practice in Philadelphia, and very soon took a good position; numbering among his patients some of the best people in the city. His private practice increased, indeed, so rapidly that he had little time to devote to public service—such as most of our physicians give—too often without recognition from those whom they serve. During the epidemic cholera of 1832, however, he made himself most useful in the House of Refuge and other public institutions, not only in the treatment of cases but in hygienic prophylaxis—and in combating, both there and elsewhere, the terror and dismay which affected all classes of the community.

In 1846, Dr. Paul, having inherited a comfortable estate

and having suffered in health from constant work, gave up his practice altogether, and retired to his beautiful country seat near his native town. Here, with the exception of a trip to Europe, and the necessary journeys to the west to look after his interests there, he ever afterwards resided. In Belvidere he led a life of quiet usefulness as an upright, public-spirited, liberal-hearted, and liberal-handed citizen—one who was calculated to raise his profession in the estimation of every one who met him. No one was ever more mindful of the ethics of the profession; so that, while always ready to consult with the neighboring practitioners, who were glad to avail themselves of his sound judgment and experience, his services were always rendered "without money and without price." Having always paid great attention to diseases of the eye—one of the earliest, indeed, of the modern school—he was enabled to accomplish much good in a department of surgery not then, or even now, much attended to by the general country practitioner. Several times after he had retired from practice he operated for cataract and other important diseases of the eye, at the solicitation of neighboring practitioners, in the cases of patients who could not go to the city. He was always, indeed, a resource for intelligent and gratuitous advice for many who would otherwise have gone without, and would have been burdens to themselves and their families. His true interest in his profession never left him, and it would be difficult to find another who, after a lapse of thirty-five years of relief from active practice, was considered to have retained his competency in all particulars, and was looked upon by his neighboring medical brethren as their great resource for advice in difficulty.

Dr. Paul was an elder of the Presbyterian Church during a great portion of his long life, and was an especial bene-

factor of the church in Belvidere. In commemoration of his mother, he erected, at a very considerable cost, a building called the "Stadleman Institute," in which he placed at great additional expense and trouble a good scientific apparatus, a very fair library, and a reading-room, with newspapers and periodicals. This Institute he intended for lectures and entertainments of a scientific and instructive nature, as well as for an habitual resort for the youth of the little town. But in spite of his energy and personal popularity the bucolic mind failed to grasp the offered advantages; and, after a sufficient time to realize his failure, Dr. Paul removed the books and apparatus, altered the building into a dwelling, and presented it to the church as a parsonage. It was especially interesting to listen to his droll account of this matter, as well as of similar undertakings. No such failure, however, interfered with his desire to do good. To the needy and suffering about him his advice was ever ready and his hand ever open. Always an early riser, he was active in the care of his lovely garden and his farm, returning to attend to his studies and correspondence, having accomplished a good day's work before his family had arisen.

A gentleman who knew Dr. Paul well said of him: "I am inclined to think he was the best man I ever knew. Inviting and affable in conversation—one of the most consistent Christian gentlemen with whom I was ever acquainted—everybody, whether child or adult, illiterate or educated, felt happy in his presence. He was the *youngest* man for his years I ever saw. No one ever seemed to think of him as an old man, though he was four-score. There was seeming youth in his heart, in his manner, in his topics of conversation, and almost in his face and figure. His generation had nearly all passed away, but intellectually he was living here

in the present, right up to the times. He saw every movement which was made upon the political chess-board of this country, of Europe, and of the world, and was deeply interested in it. He kept abreast of philosophic and scientific discovery, as well as of religious thought and progress, almost as a scholarly man of forty would do. He was a friend to every worthy person and object needing a friend. The domestic animals of the kennel and fireside rug recognized his warm heart as they looked into his genial face. The birds, as from spring to spring they came back from their southern land of song to sing for him in the branches of his noble trees, knew him as their friend, for he was accustomed to feed them from his own hand. He was the true friend of the poor and oppressed, of every nationality, and in more ways than one was accustomed to plead the cause of the colored man, the red man, and the Mongolian. The missionary of the Cross had no warmer, more liberal, or more earnest advocate." Through him and his endeavors and liberality many young men have been assisted to an education, and many into the ministry; and his influence and arguments contributed no little to the union of the dissevered branches of his church, which took place after the late war was over.

Dr. Paul died of natural decay, without defined disease of any kind, retaining, until within a few hours of his death, his mind unclouded, and his interest in things about him unabated; the natural end of a man who has obeyed nature's laws. His wife and most of his numerous family had preceded him to the tomb. He leaves behind him two daughters and a son—the latter of the same name as his father, and a successful practitioner of medicine in Belvidere.

MEMOIR

OF

JAMES AITKEN MEIGS, M.D.,

PROFESSOR OF THE INSTITUTES OF MEDICINE AND OF MEDICAL JURISPRUDENCE IN THE JEFFERSON MEDICAL COLLEGE, PHYSICIAN TO THE PENNSYLVANIA HOSPITAL, ETC.

By

HENRY C. CHAPMAN, M.D.

[Read April 7, 1880.]

It is a time-honored custom among learned academies, that, upon the death of a member, a tribute shall be paid to his memory in the form of an address, commemorative of the character, works, and position of the deceased. Where the membership in the Institution is limited, the first duty usually of the most recently elected member is to deliver an *éloge* on his predecessor. In this College, however, while the principle involved is the same, that of paying proper respect to the dead, it devolves upon the presiding officer to appoint one of the Fellows to deliver the memorial. I have therefore to thank our President for the honor afforded me, of offering this small tribute to the memory of the late Dr. James Aitken Meigs.

The subject of my memoir was born in Philadelphia, July 31, 1829, on his father's side of English and Scotch ancestry, and of Scotch and German on his mother's; a fact interesting as an illustration of Dr. Meigs's views of the influence

of heredity upon temperament. In 1848, Dr. Meigs graduated from the Central High School of Philadelphia, and almost immediately afterward began the study of medicine with Dr. Francis Gurney Smith and Dr. J. M. Allen, receiving his diploma as Doctor of Medicine from the Jefferson Medical College in 1851, his thesis on that occasion being upon "The Hygiene and Therapeutics of Temperament." Dr. Meigs at once then began the practice of his profession in Philadelphia, and faithfully pursued it almost to the hour of his death. During the year 1854, the Alumni Association of the Central High School appointed Dr. Meigs to deliver the semi-annual address, which attracted considerable notice at that time, and was most favorably commented upon by the daily papers. About this period also, he began at the Franklin Institute a series of lectures upon Climatology and Physiology, which he continued for eight years, while at the same time he delivered lectures on Ethnology and Physiology before various literary associations. For thirteen years, from 1855, he was one of the attending physicians to the Howard Hospital and Infirmary for Incurables. In 1856 Dr. Meigs was chosen librarian of the Academy of Natural Sciences of Philadelphia, which office he filled with great credit for several years, only resigning when compelled to do so by his growing professional duties. From 1857 to 1859 he lectured upon the Institutes of Medicine at the Philadelphia College of Medicine, having accepted that position through the invitation of the Faculty and Board of Corporators.

On the resignation of Prof. Francis Gurney Smith, in 1859, Dr. Meigs was elected to the chair of the Institutes of Medicine at the Pennsylvania Medical College, where he delivered two full courses of lectures on Physiology which were fully illustrated experimentally; indeed, I think I am

correct in saying that this was the first systematic attempt in this city to treat physiology from this point of view. About the same period Dr. Meigs was one of the medical staff of the Philadelphia Hospital, Blockley. From 1861 to 1866, private practice almost exclusively engaged his attention. In the spring of 1866, however, we find him giving a course of lectures on the Physiology and Pathology of the Blood and Circulation, in the summer school of the Jefferson Medical College, a course which is still remembered with great pleasure by the graduates of that period. On the resignation of Prof. Dunglison, in 1868, Dr. Meigs was elected by the Honorable Board of Trustees of the Jefferson Medical College to the Professorship of the Institutes of Medicine and Medical Jurisprudence, his inaugural address being on the Correlation of the Physical and Vital Forces. This chair he filled with the most distinguished credit till death so suddenly, solemnly, and sadly summoned him away on Sunday morning, Nov. 9, 1879, in the fifty-first year of his age.

The repute in which Dr. Meigs was held, both at home and abroad, is well attested by the numerous institutions to which he was attached, by the societies of which he was a member, and by his correspondence with so many distinguished *savans*. Amidst the anxieties of a trying and responsible practice, Dr. Meigs found time to attend conscientiously to his wards in that noble institution, the Pennsylvania Hospital, to which he had been Attending Physician since 1868, and, in addition to his didactic course, to give clinical lectures at the Jefferson College Hospital.

Dr. Meigs was a trustee in the Polytechnic College and in the Pennsylvania College of Dental Surgery, a member of

the State and County Medical Societies, of the American Medical Association, of the American Association of Science, of the Franklin Institute, of the Academy of Natural Sciences of Philadelphia, of the Historical Society of Wisconsin, of the Medico-legal Society of New York, of the Antiquarian Society of Philadelphia, of the New York Lyceum of Natural History, of the Société d'Anthropologie de Paris, the Ethnological Society of London, the Anthropological Society of London, the Societas Medicorum Svecanae of Stockholm, and the International Congress of Prehistoric Archæology. Of the letters left by Dr. Meigs, perhaps the most interesting are those written to him by Prof. Henry of the Smithsonian Institution, Dr. Nott of Mobile, Wilson of Toronto, Owen of London, Turner of Edinburgh, Broca of Paris, Von Duben of Stockholm, Pruner Bey of Cairo, Lartet of France, and Lubbock of London. All these letters are of the most flattering character, and give most ample testimony of the high appreciation in which Dr. Meigs was held abroad.

Gentlemen, I have tried to sketch for you briefly, but fully, what appear to me to be the most important incidents in the life of Dr. Meigs as a physician. There are two aspects, however, which I have only incidentally alluded to, under which Dr. Meigs was known far and wide: as a teacher of Physiology, and as an Ethnologist.

Dr. Meigs's knowledge of physiology, as shown in his lectures, was encyclopædical, as far as that expression may be applicable to any one person. His greatest difficulty was in endeavoring to present his whole subject, even in a three years' course. So profound was his learning, and so philosophic were his views, that, if I ventured to criticize, I should say that his lectures were better adapted to a circle

of cultivated physicians than to second- and third-year's students. Living the life of a student, surrounded in his beautiful library by the classical works of physiology; by monographs, pamphlets, and addresses; amidst the most carefully selected works that indirectly could throw light upon his favorite studies—biographies, voyages, travels; works upon architecture, music, painting, sculpture, and the drama, modern and ancient; innumerable dictionaries, hand-books, works of reference of all kinds: is it a wonder that, living daily in such a wealth of learning, he should have been weighed down with the responsibility of deciding what to select, and how to arrange it that it might be of practical use to his class? For Dr. Meigs was a practical man in every sense of the word.[1] What he did, he wished to do well. In his lectures he endeavored to co-ordinate the facts of anatomy, pathology, and experimental and clinical medicine, not dwelling too long upon one particular method for fear of losing time. Hence he rarely made any experiments upon animals before the class. In speaking of this subject, he says "the experiments illustrating a chemical course are for the most part simple and easy of execution, and really useful in assisting the student to remember some at least of the numerous details which constitute the science. But with physiology the experiments are too complex, and require too much time to be undertaken anywhere with success but in the laboratory."[2]

[1] "It appears," he says, "as improper to crowd suddenly upon the brain a mass of information, as it is to fill the stomach at once with a superabundance of food. In the one case a mental apoplexy, and in the other a fit of indigestion, are the results. The student should rather be taught to think and digest as he goes along."

[2] Review of Dalton and Bennett on Physiology, pp. 22 and 25.

Further, Dr. Meigs was always most cautious in accepting the results of vivisections as performed by himself or others. He tells us, "The functions of the living organism act and react upon each other without let and without stay. In experimenting upon the higher animals, the most skilful vivisector is very apt to disturb the function which he desires to study; the influence of this function upon the others is impaired, and the latter in their turn react upon the former in an irregular and unaccustomed manner. Thus arises a series of perturbations in the economy which it is difficult to eliminate or make allowance for, and which, if not eliminated, seriously obscures and embarrasses the whole investigation. Hence the wary philosopher who comes after the experimental pioneer to obtain and use his facts for the lofty purposes of generalization, always anxiously inquires how the experiment was performed, and what were its attendant circumstances."[1]

Dr. Meigs always presented his subject in what may be called the historical manner, believing, in his own words, that "to present the facts of physiology in their chronological order, is also in great part to present them in their logical order; for the acquired facts of one period in the march of science are very frequently the natural and essential precursors of those which appear at a later epoch, so that the order in which the facts of physiology were discovered often expresses truly their natural relation. The progressive or historical method is undoubtedly the best calculated to instruct the student and give him a comprehensive and profound view of physiological science."

Whenever the opportunity presented itself, Dr. Meigs called attention to the intimate connection between physi-

[1] Ibid. pp. 21 and 23.

ology, pathology, and clinical medicine, and always held that the advancement of the latter depended essentially upon the development of the former. He tells us that physiology and pathology are "in truth mutually elucidating parts of one continuous whole; the physiology that ignores pathology, or the pathology that repudiates physiology, is an incomplete and thriftless study, alike without principles and without beneficial results. If the slowly and laboriously accumulated history of medical doctrines teaches us any thing, it is that in the various epochs of that history the ruling pathological idea has been modelled after and based upon the prevalent physiological doctrine of the time."[1] The indispensability of a knowledge of physics and chemistry, and the usefulness of natural-history training to the student of physiology, was often alluded to in his lectures by Dr. Meigs, and particularly illustrated in his able paper "Relation of Atomic Heat to Crystalline Forms," published in the Journal of the Academy of Natural Sciences of this city, and in his Address delivered on "Laying the Corner Stone" of the present edifice of the Academy.

As a lecturer, Dr. Meigs was most eloquent, always interesting and holding the attention of his class. Speaking without notes, his excellent memory never failing him, and gifted with great command of language, he invariably succeeded in inspiring his students with his own enthusiasm. Cut off in the midst of his labors, the report of his sudden and unexpected death fell like a thunderbolt upon the students, faculty, and trustees. His death has been sincerely, deeply, and universally regretted by every one connected with the Jefferson Medical College, and by his many friends at home and abroad.

[1] Ibid. p. 10.

As is well known, the Academy of Natural Sciences of this city possesses in the Mortonian collection an unrivalled set of human crania, unsurpassed in value by that of any other museum in any part of the world, either as to number or variety. In the year 1857, there appeared as part of the Proceedings a "Catalogue" of these crania, by the then librarian, Dr. Meigs. The most important skulls were figured, any interesting anatomical and ethnological features were pointed out, and the whole collection was arranged and classified in such a manner as to be perfectly accessible and easily studied by any one at home or from abroad. This work at once put Dr. Meigs in the front rank of living ethnologists and craniologists. It appears to me proper to notice here that this is an illustration of the good influence that a great collection of objects of natural history, such as the museum of our Academy contains, may have upon young medical men. In the early years of their professional career, when unharassed and uninterrupted by the hourly necessities of active practice, should they avail themselves of those golden moments which too soon pass away, the foundation can be securely laid for the career of the brilliant teacher or successful practitioner of the future, which will only await the opportunity for development. The faculties of observation, discrimination, and reasoning therefrom, so indispensable to the practising physician, are the very ones so continually exercised by the philosophical naturalist. As might be expected, therefore, we find that many of our most successful physicians were, in the earlier periods of their career, active members of our Academy.

And so it was with the subject of our memoir. During his younger days, Dr. Meigs passed many hours daily in the library and museum of the Academy of Natural Sciences, ar-

ranging, comparing, and judging; getting a general knowledge of the objects and methods of natural science which influenced to such a great extent his future success as a philosophic physician. The Mortonian collection offered the opportunity which enabled Dr. Meigs to first give evidence of his learning, abilities, and powers of description. His essay on that collection was soon however followed by a much more extensive dissertation. In 1857, Nott and Gliddon published their "Indigenous Races of the Earth," a work which had for its object to co-ordinate the results obtained by the students of Language, of Art, of Climatology, and of Craniology, with a view to settle, if possible, the dispute raging between the Monogenists and Polygenists as to the origin of the races of mankind. Dr. Meigs was requested by Messrs. Nott and Gliddon to furnish them with a paper giving the results of his investigations of skulls. His contribution appeared as the "Cranial Characteristics of the Races of Men," and as it has always appeared to me to be the best of Dr. Meigs's papers, and to give in a succinct form an admirable account of the aims, methods, and present state of craniology, I will crave the indulgence of my hearers in giving a few extracts.

The treatise begins in this way:—

"A comprehensive and carefully conducted inquiry into the cranial characteristics of the races of men, constitutes a subject as unlimited in its extent and variety as it is important in its results. Such an inquiry is essentially the zoological consideration of man, or, in other words, the consideration of man as a member of the great animal series, and the consequent application to him of these fundamental laws which concern the subordination of parts, and the establishment and correlation of specific forms."

So much for the scope of the work; now for the cautious prefacing, so characteristic of the writer:—

"In the treatment of my subject, you will observe that I have confined myself chiefly to a simple statement of facts, carefully and designedly abstaining from the expression of any opinion upon the prematurely, and, perhaps in the present state of our knowledge, unwisely, mooted questions of the origin and primitive affiliations of man. Not a little study and reflection incline me to the belief that long years of severe and earnest research are yet necessary before we can pronounce authoritatively upon these ultimate and perplexing problems of Ethnology."

Some of these problems are then taken up and considered:—

"Is there one, or are there many primitive cranial types or forms? If one, how have originated the distinctions? Are these peculiarities primordial and constant, or can they be adequately accounted for by the action of external causes? To what extent is the form of the cranium modified by climatic conditions, habits of life, age, sex? Does intellectual cultivation modify the form of the skull?"

Such are illustrations of the questions our author puts to himself. After alluding to the labors of his predecessors, Morton, Prichard, Lawrence, Retzius, Blumenbach, Cuvier, Buffon, Linnæus and others, Dr. Meigs points out the value of the study of craniology to the statesman and historian, as well as to the naturalist. He says:—

"If the acts of an individual are to a considerable extent the outward expressions or functional manifestations of the organism, and if the acts of a society are the sum total of the individual acts of its members, then it necessarily follows that the civil history of a nation in great measure arises from, and is dependent

upon, the natural or physical characters of its citizens. Thus then, paradoxical as it may seem, the polygamy of the Orient, the cannibalism of the South Sea Islands, the differences between the civilizations of Europe and Asia, between the artistic powers of the negro and the Caucasian, are so many indications of the philosophical value of human osteology. But to the American citizen especially, does our science recommend itself as one worthy of all consideration, since upon American soil, representatives from nearly all parts of the earth have been gathered together during the last two hundred years. The peaceful and semi-civilized Toltecan man, once the proud master of our continent, which he busily dotted with forts and mounds, with mighty monuments and great cities, has just been swept away by the unrelenting hand of the longer-headed but less intellectual nomad of the North, the red Indian, who in his turn is suffering annihilation in the presence of, and by contact with, the larger-headed Teuton of Europe. While the lozenge-faced Esquimau of our Polar coast-line is mysteriously fading away, under the action of influences tending to render the extreme north an uninhabited waste; from the old world a steady stream of human life, a heterogeneous exodus of various races of men, is inundating our soil, and threatening to change our entire political aspect by the introduction of novel physical and intellectual elements.

"The Scandinavian, the German, the Sclavonian and the Celt of Southern Europe; the follower of Mahomet and the disciple of Confucius; the aboriginal red man and the unhappy children of Africa, have in congress assembled in the New World, not brought together fortuitously, for chance has nothing to do with the history and destiny of nations, but impelled by laws of humanitarian progress and change as yet imperfectly understood. All these have assembled to work out the problem of human destiny on the one hand, and the stability of our boasted republic on the other. Let the American reader steadily contemplate this picture and study its details; let him give ear to some of the momentous questions

which are anxiously disturbing the peace and quietness of this Congress, the ultimate disposition for example of the prognathous man imported by our English forefathers, and left with us a fearful element of discord. Furthermore, let him contemplate the members of our national Legislature, daily debating questions involving the antipathies and affiliations of the races of men without the slightest notion of their true ethnological import; let him not be unmindful also of the various political parties and secret associations which have suddenly sprung up in our midst, and are based upon ethnical peculiarities; let him behold the Chinaman celebrating his polytheistic worship in the heart of a Christian community and within the shadow of a Christian temple, while upon Beaver Island and about Salt Lake another institution of the East, polygamy, flourishes in rank luxuriance. Let the American reader, I say, contemplate all this, and in his anxiety to know the causes of these strange phenomena, the labors of the cranioscopist in conjunction with those of the philosophical historian will assume their full importance."

"If a nation lives and flourishes only so long as the progressive and leading ethnical element or principle upon which it is based is preserved in a vigorous state, and if the exhaustion of this principle is invariably accompanied with political death, then should the American statesman turn aside from the vapid and mischievous party questions of the day, questions whose very littleness should permit them to pass unheeded, and earnestly compare the historical phases of our youthful Republic with those of the fallen Greek and Roman empires, and the already enfeebled English Commonwealth, that he may learn these unalterable laws of political reproduction, evolution, and decay, and, thus forewarned, provide intelligently for the amelioration of that disease whose seeds were planted when the Declaration of Independence was proclaimed, and whose deadly influences threaten sooner or later, like the leaves of a tropical forest, to suffocate the national tree over which they are silently spreading."

This passage, of many similar ones, is an example of the broad application that may be made of ethnological studies to the practical questions of the day, and is an illustration of the interest that Dr. Meigs's work offers to the general reader as well as to the specialist.

In this same work on the cranial characteristics of the races of men, a number of technical matters are considered, such as the primitive form or type of skull, if such type exists; the relation of philology and craniology to ethnology; their relative value in determining questions of race; the differences between human skulls as compared with those of the members of an order of animals; the differences of skulls of races at birth; the pliancy of the form of the skull, etc. The skulls of the different races of men are then considered in detail, and numerous examples of most of the types are given, which assist greatly in illustrating the views of the author. In reference to the duration of races, Dr. Meigs held they were perishable as the individuals composing them.

"Tribe after tribe, race after race, nation after nation, appear successively to have occupied the soil of Europe, playing out their allotted part in the great life-drama, and then sinking quietly into the oblivion of the dim, mysterious, and eternal past, whose only records are vague traditions and strange linguistic forms, whose sole monuments are rude mounds and mouldering humatile bones. Here and there we are called upon to contemplate fragmentary and isolated communities, whose origin is lost in the night of time, and who for long ages have clung to a mountain range, to a valley, or to a water-course, differing from the more modern but still ancient people about them, and slowly awaiting that annihilation which they instinctively feel is sure to come at last. As the Universe maintains its life and pristine

vigor by an unending destruction which is simply an incessant transmutation of its parts, and as the health of the individual man is preserved by the ceaseless molecular death and metamorphosis of the tissues, so the human family—the huge body humanitarian—is kept alive and strong upon the globe by the decay and death, from time to time, of its ethnic members. If these passive, stagnating parts were allowed to accumulate, the death of the whole world would be inevitable. Thus hoary Nature, establishing in death the hidden springs of other forms and modes of life, maintains herself ever young and vigorous, and through apparent evil incessantly engenders good."

The general conclusion of the work may be embodied in the following propositions:—

"That cranial characters constitute an enduring, natural, and therefore strictly reliable basis upon which to establish a true classification of the races of men.

"That historical and monumental records, and the remains found in ossuaries, mounds, etc., indicate a remarkable persistence of these forms.

"That in the present state of our knowledge, however, we are by no means certain that such types were primitively distinct. The historical period is too short to determine the question of original unity or diversity of cranial forms. Moreover this question loses its importance in the presence of a still higher one—the original unity or diversity of all organic forms.

"That cranial forms are inseparably connected with the physics of the globe.

"Finally, then, in view of these leading facts, may we not conclude that cranial forms are definitely related to geographical locality and its attendant climatic condition, and may we not furthermore suspect that the unity of such forms should be sought, neither in a uniformity of structural plan, nor in succes-

sive development of higher types, nor even in the organic cell, the primordial expression of the animal and the plant, but in that pervading physical principle whose plastic energy attains its maximum in the regions overlying the thermometric equator, and under whose controlling influence all matter, both organic and inorganic, assumes a regular and definite form?"

In 1858 there appeared the "Hints to Craniographers," an essay which had for its object, to develop a systematic correspondence among craniologists with reference to facilitating the diffusion of ethnological ideas, the exchange of specimens, etc.

"The fragmentary human skull from Jerusalem" gave Dr. Meigs the opportunity of expressing his views as to the possibility of determining the race to which an individual belonged from an examination of a portion of the skull.

"But though the palæontologist and comparative anatomist can from minute fragments of bone reconstruct many of the extraordinary species of animals that flourished in earlier geological epochs, yet the student of human craniography can seldom with any certainty indicate from a fragment the type and race of a skull."

The "Observations upon the Form of the Occiput in the various Races of Men," 1860, serve to show that the form of the occiput is not constant, that the different occipital forms may be divided into classes, and that there is a tendency for these forms to pass insensibly into each other, none of them belonging exclusively to any race or tribe, and therefore not typical. In "The Mensuration of the Human Skull," 1861, the different methods suggested by Camper, Daubenton, Cuvier, Blumenbach, Morton, etc., for estimating the skull, are criticized, and a new and elaborate method of

measurement offered. Up to the year 1866, the question as to whether the skull of the American aborigines should be referred to one type or several, may be said to have been unsettled. It is true that Desmoulins, Bory de St. Vincent, D'Orbigny, Retzius, etc., held that the American aborigines exhibited the dolichocephalic and brachycephalic types of skull: on the other hand, the high authority of Morton countenanced the statement "that no other race of men maintains such a striking analogy through all its subdivisions, and amidst all its variety of physical circumstance." At this period, 1866, the Academy of Natural Sciences contained nearly six hundred skulls of the aborigines of Northern, Central, and South America, the richest collection in the world. Dr. Meigs undertook to make a critical study of these crania, and gave his results in the "Cranial Forms of the American Aborigines." This work at once settled the question at issue, and is held as the highest authority by the ethnologists of this country and of Europe. The general results of the treatise may be condensed in the following statements:—

"That the crania of the aboriginal Americans are divisible into Dolichocephalic. Mesocephalic. and Brachycephalic groups.

"That the Dolichocephalic greatly preponderate in number over the Mesocephalic and Brachycephalic.

"That long-headed and short-headed tribes or races are very commonly found side by side.

"That this contrast in cranial forms existed among the extinct races of America.

"That these ethnical or typical groups are founded upon osteological differences as great, and apparently as constant, as those which in Europe suffice to separate the Germanic and Celtic stocks, on the one hand, from the Ugrian, Turkish, and Sclavonian on the other."

Unfortunately for science, this was the last ethnological work published by Dr. Meigs. From time to time he contributed articles to well-known medical reviews, and he was the author of a memoir of Dr. Randolph, in Prof. Gross's American Medical Biography. His last literary effort was the valedictory address delivered at the Commencement of the Jefferson Medical College in March, 1879.

Gentlemen, I have endeavored, though I know inadequately, to portray the character of my dead friend, being actuated not merely by a spirit of gratitude, though deeply sensible of his many kindnesses, but influenced by the desire to do justice to his memory. Dr. Meigs will be long remembered by his many patients as their kind, skilful, and attentive physician; by the hundreds of his old students, scattered broadcast over this land, who once listened to him, their enthusiastic, eloquent, and inspiring teacher. But, in a moment, I may say, patients will have followed their physician, students their master, all unremembered, swallowed up in the remorseless abyss of time. But the sons of science are not so soon forgotten; and as long as the subject of ethnology is cultivated, the name of JAMES AITKEN MEIGS will shine out as one of its brightest luminaries, the worthy successor of our distinguished Morton.

MEMOIR

OF

THADDEUS L. LEAVITT, M.D.,

LATE PHYSICIAN TO THE GERMANTOWN HOSPITAL.

By

ROBERT N. DOWNS, M.D.

[Read June 3, 1880.]

By your appointment, and now with your permission, Mr. President, I purpose reading a short biographical notice of the life of Dr. T. L. Leavitt, a late Fellow of this College.

Thaddeus Lauriston Leavitt, the son of Hart A. Leavitt, deceased, merchant of this city, and Agnes (Whitesides) Leavitt, still living, was born in Alleghany City, Pa., on the 20th of September, 1840. The family removed to Philadelphia in 1844, and has continued to reside here and in Germantown ever since. Dr. Leavitt's early education was chiefly received at the Protestant Episcopal Academy of this city, and at the Germantown Academy, and also from the private tuition of the Rev. Dr. Mann. In 1859, his health having been impaired by several severe attacks of rheumatism, he went to live on a farm, at Media, Pa., to seek to restore his strength. Here he became very much interested in the work of the institution for feeble-minded children, then under the care of Dr. Joseph Parrish, and took an active part therein for two years;—it was his residence at Media which decided him to take up the study of medicine,

his intention at this time having been to make the investigation and treatment of the diseases of this unfortunate class of persons his life work.

In 1860, Dr. Leavitt began the study of his profession while at Media, and pursued it upon his return home, some time afterward, in the office of Dr. James E. Rhoads, whose student he continued to be till the doctor relinquished practice, when he completed his studies under the tuition of Dr. James Darrach, and graduated in the Medical Department of the University of Pennsylvania in 1865. In 1862, he entered the Medical Department of the Army, as Acting Medical Cadet, and was stationed at Cuyler U. S. A. Hospital, in Germantown, where he remained till 1864. He was then ordered to Washington, D. C., and served as Acting Assistant Surgeon in Lincoln U. S. A. Hospital till the autumn of the same year, when he was retransferred to Cuyler Hospital, and remained there till the close of the war. It was his connection with the Cuyler Hospital and the general practice which daily came before him there, which caused him to abandon his first formed plan, and which induced him to settle in Germantown.

In 1866, the year after his graduation, Dr. Leavitt was appointed to take charge of the Germantown Dispensary, an organization which had been in existence for a short time, and which had been, up to that period, under the care of the various physicians of the town. In this position he saw daily a large and instructive class of patients, and he held the appointment till 1877, when he resigned. In 1867, Dr. Leavitt was elected by the "Managers of the Poor of the Borough of Germantown," Physician to the Germantown Almshouse, which position he held till his death, being annually re-elected thereto. In 1870, the Germantown Hospi-

tal was established, and Dr. Leavitt was elected one of the attending physicians, and continued to serve till 1879, when he resigned. In 1868 he was elected a Fellow of this College.

It will be seen from the foregoing paragraphs that Dr. Leavitt was a busy man; and that he was also much esteemed as a physician, is shown by the appointments to the various institutions above mentioned having been given to him when so young in the profession. In private as well as in public practice, the doctor was beloved by his patients, and to them he gave the best of his energy and skill, being always interested and devoted to their welfare, and often pleasant and genial, when his own sufferings would have made one less enthusiastic and conscientious, ill-tempered and morose; for during all the period when he was engaged in the practice of his profession, he was subject to frequent attacks of rheumatic pain in his chest, which constantly served to remind him of his cardiac hypertrophy, and which in a degree compelled him to abandon some of the more active pursuits outside of his daily work, which were agreeable to him, though he did not permit his pain or palpitation to interfere with his medical duties.

Dr. Leavitt contributed to the journals several papers on medical subjects, the principal of which were on the use of the Hyposulphites in Intermittent Fever, and on Permanganate of Potassium in the Treatment of Chronic Ulcers, both of which were published in the *American Journal of the Medical Sciences;* he also contributed reports of cases while in the Lincoln Hospital, at Washington, which were published in the *Medical and Surgical History of the War.*

His whole life was very uneventful, and unmarked by any stirring scene or incident, being entirely devoted to the daily

duties of a conscientious physician in a moderately active practice; his exceeding love of flowers led him to take a busy part in the Horticultural Society of Germantown, of which he was one of the originators, and treasurer; while his religious turn of mind made him a useful and much respected communicant and vestryman of St. Michael's P. E. Church. He married, June 2, 1870, Mary E. Noble, daughter of the late Frederick R. Backus, of Philadelphia, who survives him without issue by this marriage.

Late in the year 1879, an attack of bronchial catarrh compelled the doctor to relinquish his work, but as his heart symptoms remained quiet, and there was no yielding of its tissue, no apprehension was felt in regard to his condition, though he had a renewal of his old intercostal rheumatism. He had been at Atlantic City for a fortnight, and thought himself fairly convalescent. On Sunday morning, February 22, he arose after a quiet night's rest, and shaved and dressed himself, and said to his wife that he felt better than he had done since being at the shore; he was about leaving his room when he felt a sudden, intense pain, above and a little behind the right anterior spinous process of the ilium, and an immediate desire to urinate, though he had passed urine freely but a short time before. To his horror, a full, strong stream of bright red blood flowed, and continued to escape rapidly, till he fainted and fell on the bed in a condition of profound shock. On recovering consciousness, he realized that the attack would prove fatal, and thought that he should die before any physician could see him; and indeed so severe was the hemorrhage, that Dr. Reed, of Atlantic City, who saw him very soon, feared that he would die instantly. He recovered somewhat from this extreme condition, and, when I saw him in the afternoon, had rallied considerably, though he did not

thoroughly react, remaining cold, clammy, and almost pulseless, and with very irritable stomach and intense thirst. Through the night he gradually failed, and quietly passed away about daylight of February 23. No post-mortem examination was made, and consequently it can only be surmised what vessel gave way, causing the fatal and unusual hemorrhage.

I have given but a meagre sketch of Dr. Leavitt's life, and, though I might say much eulogistic of his character, prefer not to do so; I may, however, be permitted to add that, having known him intimately during all his mature life, I always found him, as he was esteemed by his neighbors, an earnest Christian physician—and no man can occupy a more noble station in this life. He early made a public profession of his faith, and he lived it daily in his private walks and works. As a physician, he was painstaking and careful, and was devoted to the good of his patients, both in private practice and in the Almshouse and Hospital; and no considerations of personal comfort ever interfered with his professional obligations. As stated, it had been his original purpose to give his attention specially to the diseases of the feeble minded, but he was diverted from this plan by the opening of the military hospital to which he was attached while a student. Several times during his last sickness he reverted to it as an error, that he had not adhered to his first intention, saying that he would thus have been of more use to his fellow-man than in general practice; frequently during the last fortnight of his life, he passed it, as it were, in review, and regretted that he had been able to do so little for suffering humanity; and it was very pleasant to him to recur to the life at Media and at the Cuyler

Hospital, and to go over the old scenes again; perhaps "the shadow feared by all" was more visible to him than to his friends, and because there was not much more work ahead for him, therefore he loved to look back and talk over what he had and had not done, feeling that he was nearly through with life itself.

In personal appearance, Dr. Leavitt was a large, finely developed man, with a singularly frank and winning countenance, and a mildness of expression and voice which was very attractive. The whole outward man depicted the intense honesty and goodness of his character; and the one trait which always most impressed me, was his thorough honesty in everything—not alone in paying his debts, but his honest truthfulness in every statement he made, and in every view he took of any subject; he might be in error, but he was sincerely not fictitiously so.

I have not much more to say; into the family circle where this bereavement has come with unspeakable anguish, I have no heart to enter; to the widowed mother, bereft of her only child—her pride and comfort; to the now widowed wife, who has lost her support and loving companion—my words would seem as a mockery; and into their grief, notwithstanding my sincere sympathy, I will not intrude—but do most devoutly commend them to the One who knoweth that they "have need of these things."

MEMOIR

OF

JOHN NEILL, M.D.,

LATE EMERITUS PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA.

By

EDWARD SHIPPEN, M.D.

[Read October 6, 1880.]

Mr. President and Fellows of the College: I regret exceedingly that some one has not been found more capable than I am of discharging the duty devolving upon me to-night. To place a green wreath upon the grave of John Neill is a labor of love with me; and yet I know full well that simple love and esteem give no claim to duty of this nature in this place. My only right to speak of our departed fellow and friend is conferred by an unbroken intimacy of thirty-five years; an intimacy begun in the relation of instructor and pupil; continued as demonstrator and assistant; and confirmed as, in time, we became connections, and he the trusted and beloved family physician. And here I hope I may be pardoned if I recall that, with many honest differences, and many warm debates, in the course of all those long years, I may say, in the presence of the dead, not a shadow of bad feeling ever passed between us; not the misunderstanding of a moment. This is a great deal to say of the life-long intercourse of any two men. We make no

such friendships in later life: The gaps made by death are then never filled; and it is left for us only to mourn the departed—not, let us trust, without hope.

John Neill, the ancestor of the subject of this notice, came to America from Tyrone, Ulster, Ireland. He had already studied law and had been admitted to the bar in his native country, and settled at Lewes, Delaware, and began the practice of his profession in 1739, soon rising to be one of the influential and distinguished men of his region. He had two sons, the elder of whom died *sine prole*, but the second of whom, also named John, was the father of Dr. Henry Neill, long a successful practitioner in Philadelphia, and a fellow and an officer of this honorable body; whose portrait hangs in the northern hall of this building. John Neill M.D., the subject of our sketch, was the third son of Dr. Henry and Martha Duffield Neill, and thus came of a medical ancestry on both sides, as his mother was the daughter of Benjamin Duffield, M.D., and a near relative of the distinguished surgeon-general of revolutionary times, Dr. Jonathan Potts.

I may, perhaps, be excused for devoting a few words to Dr. Benjamin Duffield, on account of his having been one of the originators of this College. An ancestor of the same name, Benjamin, came to this country in 1661, and purchased large tracts of land in Maryland, in Philadelphia, and in the manor of Morland, in Bucks County. Benfield, one of his houses, three miles from Holmesburg, is still standing. Without giving the intermediate links in the family chain, we may pass down a century, to the year 1758, when Benjamin Duffield, M.D., the son of Edward, was born at Benfield. He graduated at the College in Philadelphia, which was afterwards to become the University of Pennsyl-

vania; and, in 1771, proceeded "A.M.," his thesis being a poem entitled "Science." He at once began the study of medicine, but, owing to the state of the country, no diplomas were granted at the time he completed his course, in 1774. He, however, received certificates, signed by Drs. Morgan, Shippen and Kuhn, that he had attended all the courses, and was duly qualified; as well as from the Physicians of the Pennsylvania Hospital, and from his preceptor, Dr. Redman.

Dr. Duffield married Rebecca Potts, and his first public position was that of surgeon in charge of a military hospital at Reading, during the Revolution. After the war he settled in Philadelphia, where his knowledge of foreign languages, in which he was proficient, gave him an extensive practice among the many foreign families which had, by that time, settled in our city. In addition to his practice he conducted courses of lectures on midwifery, was Physician to the Yellow Fever Hospital at Bush Hill, during the epidemic of 1793, and was also Physician to the Walnut Street Prison, where he delivered lectures on the Diseases of Jails and Hospitals. Dr. Duffield was a great wit, and a ready writer. The first volume of the Transactions of this College (of which, as I have said, he was one of the originators) contains one of his papers. He died in 1799, in his very prime, leaving two sons and three daughters. All of the latter married physicians. The eldest married the well-known Dr. Church; the second Dr. Henry Neill; and the third Dr. Martin, of Maryland, who was distinguished in the Councils of the State, as well as eminent in his profession.

John Neill, thus honorably descended on both the paternal and maternal sides, was born in Philadelphia, on July 9, 1819, and was prepared for college at the well-known school of

Dr. Samuel W. Crawford, passing the examination for admission to the University of Pennsylvania at the age of thirteen, though, on account of the regulations of that Institution, he was not permitted to actually enter the University until the following year. While in College, Dr. Neill was a diligent student, especially in the classics, the love for which he retained throughout life. Finishing his course with the second honor, the subject of his commencement address was "The Investigating Spirit of the Nineteenth Century." After graduating from the Academical Department, in 1837, he at once entered the Medical Department of the University, and received the degrees of A.M. and M.D. in 1840, the subject of his thesis being "Diseases of the Eye," a subject suggested, no doubt, by the fact that, previous to graduation, he had been appointed House Surgeon to Wills Hospital, where he remained two years, laying the foundation of that remarkable ability with which he ever after operated upon the eye and ear. Upon leaving Wills Hospital he was for some time a substitute for one of the resident physicians in the Pennsylvania Hospital, whence so many of our best men have derived invaluable practical instruction.

Before settling down to practice, Dr. Neill made a voyage to the West Indies, in charge of a patient, at the same time recruiting his own health, which had been somewhat impaired by his close devotion to his duties. In 1842 he began practice, and the private instruction of medical students; and in the autumn of the same year was made Assistant Demonstrator of Anatomy in the University, where he also assisted Professors Horner and Gibson in preparation for their lectures. At the same time he was a Vaccine Physician, and Physician to a City District, under the Guardians of the Poor. In 1845 he succeeded Dr. Paul B. Goddard as

Demonstrator of Anatomy in the University, in which capacity, by the accuracy and clearness of his demonstrations, the neatness and delicacy of his dissections, and his magnetic power of communicating instruction, he drew together, perhaps, the largest class in Practical Anatomy which the University, up to that time, had ever seen. By permission of Professor Horner he recapitulated to this class the anatomical lecture of the day, occupying the amphitheatre for this purpose. In addition to the great labor of lecturing, teaching, procuring material for dissection (then done with difficulty, great expense, and even danger), and beside attending to increasing public and private practice, Dr. Neill had, since 1842, been connected with Drs. Reese and Benedict in an association for the winter examination of students and for summer instruction, with a class which was always large, at one time numbering eighty.

About the year 1846, these gentlemen revived the old "Philadelphia Medical Institute," a well-known summer medical school of former time, which was founded by Professor Nathaniel Chapman, and which boasted among its former lecturers such distinguished names as Chapman, Horner, Gibson, T. Harris, Dewees, J. K. Mitchell, Jackson, Hodge, and Bell. The Medical Institute was continued as a summer school until about 1850; Dr. Neill lecturing on Anatomy, Dr. Reese on Materia Medica, and Dr. Benedict on Obstetrics, the late Professor John F. Frazer being their colleague in chemistry. Dr. Benedict was, for the last year, replaced by Dr. Wm. Byrd Page. In 1847, Dr. Neill had been elected a Surgeon to Wills Hospital, and, during his tour of duty there, was always accompanied by an attentive class of students.

In 1849, the Asiatic cholera visited us for the second

time, and Neill was Physician to the Southeast Cholera Hospital, which was established in the old Friends' Meeting House, in Pine Street, above Front. During his service here he made the minute injections upon which was based the Report made to this College, and published in its Transactions, as we shall state more fully hereafter. While making these investigations he was himself attacked by the disease, was taken to the Hospital, directed his own treatment, and concealed the fact of his illness from his family and friends until the epidemic was over; explaining his prolonged absence by the plea of pressing business. As soon as he was able, he returned to his labors, and there are many of us who will remember his zeal, activity, and buoyancy amid the gloomy and depressing scenes of that dreadful summer.

Dr. Neill was elected Curator of the College of Physicians on the 2d of October, 1849, being the first incumbent ever chosen for that important office, which he held for eight years. The Committee on the Museum at the time of his appointment consisted of Drs. Moreton Stillé, Edward Hallowell and Isaac Parrish. At the regular meeting in November, Dr. Neill presented the first Curator's report, stating that "since the last meeting of the College a case has been erected on the south side of the Hall" (of course in the old Hall), "to receive the first contributions to the Pathological Cabinet of the College of Physicians. The late Dr. Parrish, Vice-President of the College, was an industrious collector and conservator of pathological specimens; and the bulk of his cabinet, which served for the purpose of illustrating his lectures, has been presented to the College." To these were added, both at that time and afterwards, valuable contributions from the Curator himself.

At the meeting of Dec. 4, 1849, the Committee on Cholera,

of which Professor Samuel Jackson was Chairman, and Drs. Neill, H. H. Smith and Pepper were members, presented a report upon the injections of the intestines of patients dying of cholera, which had been made by Dr. Neill, as has already been stated. The Committee reported that "the admirable manner in which he has performed this duty can be judged of by the beautiful preparations now upon the table, which he has presented to the College for its Museum." The injections were made with turpentine colored with vermilion, having failed when size and Canada balsam had been used. This had led, at first, to the supposition that the capillaries of the intestinal tract were destroyed by the disease; but the method devised by the investigator showed the perfect integrity of those vessels. A portion of healthy intestine, taken from the body of a patient who had died of pleurisy, was injected with the same fluid as a standard of comparison. These preparations speak for themselves; they form a groundwork for any future investigation, and those interested may find them in the Museum of this building. The whole series consisted of eleven mounted wet, and twelve dry preparations, four fitted for the microscope, and seven drawings. An interesting discussion ensued upon the presentation of these specimens to the College. For several years after this, the Transactions contain frequent notices showing the activity and industry of the Curator, in spite of his many other imperative duties; but he was deeply interested in the work, and whatever he did he did with his whole heart.

In 1852, three years after becoming Curator of the College, the subject of our sketch was elected one of the Surgeons of the Pennsylvania Hospital, which he served faithfully for seven years, with signal honor to himself and benefit to his patients, effecting more than one permanent improvement

in the art of Surgery. At this time his ability as a clinical lecturer and as a very skilful operator became conspicuous, so that he was gladly welcomed, in 1854, as an acquisition to the Faculty of the Medical Department of Pennsylvania College, then in Ninth Street, near Spruce, where he assumed the chair of surgery; and where he was associated with such men as Professors Francis Gurney Smith, J. H. Allen, John B. Biddle and David Gilbert—all of whom have passed away—and Professors Alfred Stillé and John J. Reese, who still survive, and hold enviable positions in the profession. To enable Dr. Neill to become a member of this Faculty, Dr. Gilbert resigned the chair of surgery, and took that of obstetrics. About this time, too, with a view of extending the clinical opportunities of his students, Dr. Neill accepted the appointment of Surgeon to the Philadelphia Hospital at Blockley.

Under the Faculty just named, the Pennsylvania College was making fair progress, and gaining steadily in reputation and in friends—everything going smoothly for five annual sessions—when a difficulty arose in filling one of its most important chairs; and the Faculty determined to resign in a body, in favor of the Faculty of the "Philadelphia College of Medicine." These last were duly elected, and the "Philadelphia College" thereby became extinct. This event took place in 1859. While Dr. Neill was a member of the Faculty of the Pennsylvania Medical College, occurred the resignation of Professor Wm. Gibson from the Chair of Surgery so long and worthily held by him in the University of Pennsylvania. A very influential body of friends urged Neill to become a candidate for the position, but several reasons prevented him from doing so. Of these the strongest, no doubt, was the consideration that it would not be fair

towards the Faculty to which he belonged, and which had secured his services by a special change in its organization. He thus was deterred from putting himself forward as an applicant for a chair for which he was acknowledged to be especially fitted, and which had been the legitimate object of his ambition.

After his resignation from the Pennsylvania College, Dr. Neill devoted himself, for two years, to the building up of his private practice, which had too often been neglected for his public duties. Beside family practice, which at this time rapidly increased, he had numbers of cases of surgery, both at home and sent to him from a distance, often by former pupils. He also, not unfrequently, made journeys to perform important operations.

Thus time passed, usefully, happily, and profitably, until that memorable Sunday in April, 1861, when the fall of Fort Sumter was telegraphed over the whole country, and Neill, as if by inspiration, felt that a long and bloody conflict was at hand, and was confident that in such a case Philadelphia must, for many reasons, become a great centre for military hospitals. That same day, without consultation with any one, he drove about the city in search of halls or public buildings adaptable to hospital purposes, and finding one on Christian Street above Ninth Street, formerly Moyamensing Hall, he obtained permission from the mayor, Mr. Alexander Henry, to take possession of it. Telegraphing and writing to Dr. Finley, then Surgeon-General of the Army, he obtained from him authority, as a contract surgeon, to establish there a United States military hospital. About the same time the Home Guard was organized, and Neill was appointed Medical Director of that body, with the Christian Street building as the hospital of the guard,

and, by the terms of the general order, "also to be used for any others in the service of the United States, and to be governed by U. S. Army regulations." As medical officers of the Home Guard there were appointed, in addition to the Medical Director, such well-known gentlemen as Drs. Francis Gurney Smith, S. Hollingsworth, John H. B. McClellan and Ellerslie Wallace, as surgeons, and Drs. John H. Brinton, George C. Harlan, John H. Packard and F. W. Lewis, as assistant surgeons. Very soon the establishment of the hospital became known throughout the city, and contributions of money and supplies came in freely; and in a few days the first war hospital in Philadelphia was ready for the reception of the sick and wounded. It was thus with Neill in all matters, great or small, in which he was interested. Action very promptly followed conception, and this trait was one great cause of his ability in professional emergencies.

When the disastrous battle of Bull Run took place, the director of the hospital was authorized to put in action the machinery of government railroad transportation, and the capacity of the hospital was soon tested to its utmost—to the relief of untold suffering, and the saving of many lives. From time to time thereafter, as the emergency arose, Neill was authorized to secure and equip one large building after another; and to remodel and prepare them as general hospitals, with surgeons and their staffs attached to each. Some of these were among the largest in the country, and were used during the whole war. Neill, himself, was placed in charge of the hospital at Broad and Cherry Streets, where most of the cases arriving from the South were received, classified, and then transferred to other hospitals. The establishment soon became noted for its discipline, cleanliness, and comfort. Here the sick and wounded found baths, clean

clothing, and the necessary food and delicacies all prepared for them, at any hour at which they might arrive; and necessary operations were performed with promptness, skill, and tenderness, either by the surgeon in charge, or by selected and trusty assistants. All these knew that the vigilant eye of their superior was upon them at all times, and that his unflagging industry and zeal made his frequent inspections anything but perfunctory.

It is not necessary to dwell upon the medical and surgical history of those days. Many of us have them so impressed upon our memories that we shall only lose them with life itself; but we may, perhaps, mention one incident which tends to illustrate Neill's promptness in duty. With him, to think was to act; and so great was his ability for organization and administration, that in the shortest conceivable time he would bring order out of the direst confusion. Thus, on one occasion, he received a telegraphic order from the Secretary of War to be in readiness for some hundreds of sick and wounded—nine hundred, I think—then actually upon their way. The hospitals were all full to overflowing, but he at once secured a large storehouse, had it swept and arranged, necessaries supplied, and in a very few hours was ready to receive this large number of patients, with soup, coffee, bread, beds, medical stores and medical aid all at hand. The arduous labor of establishing and putting in working order eight hospitals was performed, we may say, gratuitously—for Dr. Neill was not commissioned as Surgeon of Volunteers until the fall of 1862, and up to that time only acted as Contract Surgeon, at $80 a month. His position in the Home Guard, as Medical Director, was purely honorary. It was in keeping with the nature of the man that he should have worked with such devotion, for so long

a period, without bestowing any consideration upon the pecuniary reward he was to receive for his labor.

Upon the invasion of Pennsylvania by Lee's army, in 1863, Dr. Neill was appointed Medical Director of the forces from that State, under General William F. Smith, U. S. Army. Many who hear me will remember those dark days, when the State House bell was tolling to summon volunteers, and when all trades and professions, even the exempt, turned out to meet the approaching enemy; and when even venerable ministers of the Gospel were to be seen with intrenching tools in their hands, throwing up works for the defence of our city, so near to occupation by the Southern forces. General Smith and his headquarters, with the most advanced of the improvised force, reached Carlisle about sunset, one evening, to find the place almost invested by Fitz Hugh Lee; and they had no sooner entered the town than he opened his batteries upon it. The volunteers had about thirty of their number wounded by shell, in a very few minutes, but, owing to the soldierly dispositions of General Smith, none were captured; and the Confederate force quietly drew off in the direction of Gettysburg, to fight the great battle of the war. Unaware of this movement on their part, and with the expectation of further casualties on the next day, Dr. Neill prepared Dickinson College—which had not escaped unscathed from the bombardment—for a general hospital; and passed the night in this work, and in collecting the wounded, having them cared for, and in insisting upon a more conservative treatment than some of the wounded seemed likely to receive at the hands of excited and inexperienced surgeons. The following day, headquarters marched to Pine Grove, and thence to Hagerstown—at each of which places Neill established hospitals, which were

afterwards of the utmost importance, and the fitting up of which involved immense labor and loss of rest. For meritorious services in this campaign, he was brevetted Lieutenant Colonel.

After the war, Dr. Neill was appointed Post-Surgeon at Philadelphia, holding that office for some time; and then was made examiner of recruits, which position he retained until 1876. About the close of the war he became Consulting Surgeon to the Institution for the Deaf and Dumb; and also held the same position on the Staff of the Presbyterian Hospital—the establishment of which he was, I am informed, the first to suggest in a public and practical way. In 1874, when the Chair of Clinical Surgery was established in the University, Dr. Neill was elected to it by the trustees; and thus was fulfilled the crowning ambition of his life—a surgical professorship in his Alma Mater. He entered upon his duties with his usual ardor, and I feel sure that I am speaking within bounds when I say that no better lecturer on Clinical Surgery was ever heard in this city, which has produced so many.

Dr. Neill was much interested in, and a strenuous advocate of, an extended course of medical instruction, as now so happily inaugurated. Unfortunately, he was permitted to give but one course of lectures, when he was attacked by the fatal disease which terminated his life. During two years of his lingering illness he was in total blindness, unable to distinguish night from day. He bore his affliction with a patience and resignation which was marvellous, and, during the whole of his long illness, never uttered a complaint. He finally succumbed on the morning of February 11, 1880, in his sixty-first year. As soon as it was evident that his days of usefulness were over, Dr. Neill resigned his professorship,

and was made Emeritus Professor of Clinical Surgery in the University.

In the course of his busy life, Dr. Neill found time, in addition to his notices in the Transactions of the College, to publish in the Medical Examiner (then edited by his brother-in-law, the late Dr. Samuel Hollingsworth), between the years 1849 and 1855, no less than twelve valuable articles, two of which at least—those on Treatment of Fracture of the Patella, and on Extension and Counter-Extension in Fracture of the Leg—have passed into the literature of the profession. To the American Journal of the Medical Sciences he contributed, between 1842 and 1875, seven papers—all of which are of more than common interest. Early in his professional life, while actively engaged in teaching, he prepared and published three little works upon the Veins, Arteries, and Nerves, which had a great success. Their merit consisted in original drawings, colored, with the names placed upon the parts, instead of being referred to by numbers—rather a novelty then, and a great relief to the student. About the same time, in conjunction with the late Dr. Francis Gurney Smith, afterwards the distinguished professor of physiology, he compiled the well-known "Compendium of Medical Sciences," Dr. Reese furnishing the parts upon Materia Medica and Chemistry. The work at once found its way into the hands of students in every part of the country, and was thus successful; but Dr. Neill, in after years, frequently was heard to regret that he had ever been connected with a publication, however successful, which contributed so largely to make medical education superficial. Possibly he was over-sensitive in regard to this subject, but I feel bound to state what I know to have been his feeling. Just before his last illness he had projected a work upon the Principles of Sur-

gery, which he intended should be worthy of himself, and of the chair which he occupied. Unfortunately for the profession, he had only completed the notes for the first chapter, when the great calamity befell which cut short a life from which many years of usefulness might reasonably have been expected.

Dr. John Neill was a man of catholic mind—ever interested in literature, art, politics, and the social topics of the day. He was a ready and pleasing writer, his style being remarkable for its curt, incisive sentences—divested of all redundancy or verbiage. With great powers of concentration upon the subject of inquiry or interest at the moment before him, he was always true to his profession, giving it the first place. Although a conscientious and successful general practitioner, he was especially a surgeon—of surpassing skill in diagnosis, and ability in operation. He loved his profession for itself, and found high compensation in the consciousness that he had devoted to its pursuit all the energy and ability which he possessed. Its pecuniary rewards were, with him, always a secondary consideration; at times, indeed, entirely too much so. Dr. Neill's most striking characteristics were quickness of apprehension, intensity of application, and perseverance in execution. Of these, perhaps, the most prominent was his intensity; whatever he found to do, he did with all his might. His affections were warm, firm, and very fixed. He had strong prejudices—as most strong men have—but, once convinced of error, he was ever ready to yield them. He was a man of pure life; singularly modest, reverent, and holding an unswerving faith in the doctrines of Christianity, while most liberal in regard to forms of worship.

Although of temperament somewhat unequal, at times

buoyant and hopeful, and at others much depressed, he was genial in manner, very generous, and given to hospitality. In both medical and surgical practice he might have been classed as soundly conservative, while always ready to give fair trial to methods and remedies which commended themselves to his reason. Always cheerful at the bedside, as a matter of duty, he never failed to inspire his patients with hope as well as with entire confidence, often thus rendering them greater service than by the administration of remedies; and it seldom happened that he did not render a patient a personal friend. May we all be mourned as sincerely as he is!

MEMOIR

OF

ISAAC RAY, M.D., LL.D.

By

THOMAS S. KIRKBRIDE, M.D.

[Read July 6, 1881.]

The subject of this memoir became a Fellow of the College of Physicians in July, 1868; he was always interested in its proceedings, often reading valuable original papers, and generally participating in its discussions. The estimation in which he was held by his associates, was shown by the action of the College on the occasion of his death, and by the resolutions subsequently adopted and ordered to be entered on its minutes. It may safely be said that few men, at home or abroad, have attained a higher eminence—as members of the medical profession, as directors of institutions for the treatment of the insane, and as writers on insanity and medical jurisprudence—than Dr. Ray. He became a resident of Philadelphia in the autumn of 1867, and from that time took an active interest in whatever tended to advance the welfare and prosperity of his adopted home. He was a frequent contributor to the daily press, and almost all the subjects that were generally discussed, in one way or another, had the benefit of his mature judgment and thoughtful consideration. He was always ready to give

his time to the promotion of objects of benevolence, and to render assistance to those who were specially unfortunate, and his very extended and varied experience secured for his opinions a more than ordinary degree of respect and public confidence.

Dr. Isaac Ray was a native of Massachusetts. Born of highly respectable parents, in the town of Beverly, on the 16th of January, 1807, he there commenced his earliest education, subsequently entering Phillips Academy at Andover, and afterwards Bowdoin College, where he remained till compelled by ill health to leave his studies, which he had been prosecuting with great assiduity. As soon as his health was sufficiently restored, he began the study of medicine in the office of Dr. Hart, of Beverly, completing his studies under Dr. Shattuck, a distinguished physician in Boston, and ultimately graduating at the Medical Department of Harvard University in 1827. In that year he began the practice of his profession at Portland, Maine, and while there he delivered his first course of lectures—on Botany—a branch of science for which he had a great fondness. It was at one of these lectures that he first met the lady whom he subsequently married in 1831, Miss Abigail May Frothingham, a daughter of the late Judge Frothingham, of Portland, who still survives him, and with whom he lived in a most happy union for a period of just two months less than fifty years. From this marriage two children were born: a daughter, with rare traits of loveliness, who died at the age of fourteen, and a son, to whom fuller allusion will be made in a later part of this notice.

About two years after Dr. Ray had commenced the practice of medicine in Portland, Maine, inducements were offered to him to leave that city and settle in Eastport in

the same State, and there soon after he fixed, as he then supposed, his permanent residence.

It was at this time, while living in Eastport, that Dr. Ray first had his interest excited on the subject of insanity and the treatment of the insane, and especially in reference to matters connected with the branch of medical jurisprudence relating to it. The prevalent views on all these subjects were then far behind what are common at the present day, and led Dr. Ray to prepare a work, "The Jurisprudence of Insanity," since generally recognized as one of the highest authorities in this department of medico-legal knowledge, and quoted alike by alienists, lawyers, and all others interested in the subject, at home and abroad. No better evidence of its being generally appreciated need be given than the fact that six editions of it have been exhausted in this country, while it was a source of grief to Dr. Ray that his condition of health rendered it impossible for him to prepare a seventh, which had been asked for by his publishers, and for which he had on hand interesting and important materials. The steady increase of popularity attained by "The Jurisprudence of Insanity," as might have been anticipated, led to a change in the tone of the criticisms made in regard to it. From being originally adverse in many quarters, they became highly commendatory everywhere.

Dr. Ray was appointed Medical Superintendent of the State Hospital for the Insane at Augusta, Maine, in the year 1841, and this led to his permanent removal from Eastport. He immediately assumed the duties of this position, residing in the institution, till he was invited by the Board of Trustees of the Butler Hospital at Providence, Rhode Island—which was then about to be organized—to become its Superintendent.

The experience of hospital life and management in a State institution was of great importance to Dr. Ray. It enabled him to detect and to expose many of the weak points to which this class of hospitals is made liable, and gave to the emphatic views which he always afterwards expressed a particular value from the practical nature of the observations which had led to them. He never failed to censure in the strongest terms the evil results of a political management, of giving to the directors of such institutions a personal and pecuniary interest in their business affairs, and of confiding to those in no way qualified by education and experience the control of the important matters of treatment and government assigned to them. He was always ready to denounce an institution without a head, as much as one with many heads, as a monstrosity that could not, unless under extraordinary circumstances, be more than a very temporary success; and his enunciation of sound views on all such subjects, on all proper occasions, has exercised an important influence in every part of the country.

Dr. Ray found his position at Providence a specially pleasant one. His labor was much less arduous than it had previously been; he was enabled to carry out his own well-considered plans, and it afforded him a long-desired opportunity to visit many of the more prominent institutions for the insane in Great Britain and on the continent. The fruits of abundant practical knowledge and a careful study of the whole subject gave him special qualifications in these investigations to detect errors, to weigh the value of so-called reforms, and to make a trustworthy comparison of the actual advantages and disadvantages to be found in the institutions at home and abroad. With this view Dr. Ray sailed for Europe soon after his appointment, and in this

manner passed the summer months of 1845. He spent the next two years in superintending the erection of the Butler Hospital, which was opened for the reception of patients in 1847. Then taking up his residence in the hospital, he remained there superintending its affairs with great ability, and to the satisfaction of all who were in any way connected with it, till January, 1867, when his impaired health compelled him to resign this position to which he was so much attached, and in which he had done so much to elevate the standard of hospital treatment for the insane. This relief from labor, and from all the cares and anxieties unavoidably incident to the conscientious superintendence of a hospital of this description, made him greatly enjoy a rest, such as he had never before taken, except during his trip to Europe. He spent most of the year in visiting his professional brethren in different parts of the country, and, in selecting a place for his permanent residence, finally adopting the city of Philadelphia. Here he continued to live, at his residence on Baring Street, till his death on the morning of the 31st of March, 1881, being then in the seventy-fifth year of his age.

The change from a New England climate to that of Philadelphia, and the rest from constant labor which was now permitted him, made a great improvement in Dr. Ray's health. He increased his literary work, enjoyed engaging in matters of general public interest, and found himself able to take an amount of physical exercise to which he had of late been a stranger. His regained strength enabled him also to accept calls in consultation from his professional brethren, and especially as an expert in legal and criminal cases, in which his services were frequently solicited.

Dr. Ray was a member of many professional and scientific

associations. Wherever he was thus associated he was noted for his active interest, and for the part he took in the preparation of papers and his participation in any discussions that might take place.

He was one of the "original thirteen" superintendents who established "The Association of Medical Superintendents of American Institutions for the Insane," in 1844; was its president from 1855 to 1859; and always took a very marked interest in its proceedings. His papers read at its meetings were numerous and of great ability. Many of these cannot fail to take a permanent place in the literature of the profession. Dr. Ray formed the highest estimate of the importance of this association and of the value of the work which it had done, and especially believed that to it the insane were to look for most of the changes which were likely to be made in their care and management which could lay any claim to be for their best interests, or really worthy of the name of progress. Its "Propositions," now more than a quarter of a century old, and having stood the test of trial in every section of the country, had in him a staunch defender, and his practical knowledge and extended observation of other systems gave to his views an especial worth. At the meeting of this association at Providence, in 1879, he was the recipient of distinguished honors from his old associates and friends, from the Rhode Island State Medical Society, of which he had been president, and from Brown University, which on this occasion conferred on him the Honorary Degree of Doctor of Laws. Of the principles established by the association, Dr. Ray, like all his most experienced brethren, was particularly decided in regard to the importance of a proper organization. He knew from extended observation of other schemes that only a single

head, controlling, as he must have the responsibility of, all departments, can be relied on for a permanently successful administration, and he lost no suitable opportunity for enunciating this most important principle, no departure from which he believed could ever be justified as tending to promote the best interests of the insane.

Dr. Ray was one of the founders of the Social Science Association, and was always an intelligent student of every subject which came under its consideration. His papers read before it, and his views in all matters that received its attention, were distinguished for practical good sense and advanced conclusions in regard to the welfare of the community.

He was at one time a most useful member of the Board of Guardians of the Poor of Philadelphia, giving his valuable time to the duties of the post, which, conscientiously performed, could not fail to be onerous. His experience and his devotion to the insane led him to take an active part in the work of that department. He was not long in detecting its grave defects, and in suggesting the proper remedies; but the minority, with which he acted, had the power to introduce but a few of the reforms which they knew to be indispensable. It is one of the remarkable events of the times that the public authorities were willing to dispense with the unremunerated services of such a man as Dr. Ray, to make a place for some one who had not, and who from his previous life could not have, the first element of knowledge fitting him for a post, one of the most important duties of which was to secure for the insane a liberal and enlightened treatment.

Dr. Ray delivered two courses of lectures on Insanity and Medical Jurisprudence before the class of one of the medi-

cal colleges of Philadelphia, but, as usually happened in regard to his public labors of the kind, they were without compensation, and demanded an amount of time which he could ill afford to continue to give. While it must be acknowledged that it is not easy anywhere to secure such a course of instruction to students as Dr. Ray was competent to impart, still it must be conceded that lectures of this kind in every medical school would do much to advance the study of mental diseases and their treatment, would make the profession, and through it, the public, better able to detect the many defective schemes of organization now presented for hospitals for the insane, and would lead to a much higher order of discussions in many of the meetings held ostensibly for the special improvement of the care of the insane, and in others in which their management of late has seemed to be the favorite subject for consideration.

Dr. Ray was about the medium stature, but did not possess a very robust constitution. His features were marked, and his general expression grave. He had an abundance of rather stiff hair, which of late years was entirely white, and from his way of treating it, it was commonly somewhat in disorder. His manner was dignified, his language clear and distinct, and in speaking or writing he always used a pure English, and attracted the attention of his auditors no less by his personal appearance, than by his manner of delivery and the matter of his remarks.

Dr. Ray for many years had been troubled with a chronic cough, which seemed to be bronchial in its character. Although annoying, this cough did not appear materially to affect his general health, and after taking counsel from the most able of his medical brethren, he seemed to have concluded that his malady was one not likely to be removed by

treatment. The great change in Dr. Ray's health which occurred in the latter part of 1879, was evidently more the result of a great and unexpected family affliction, than of his previous condition. His only son, Dr. B. Lincoln Ray, was a highly educated physician, living with his parents in Philadelphia, greatly valued by them, and distinguished as a student and writer of very marked ability. Of vigorous personal appearance, he nevertheless was conscious for some time before his death, of an impending cerebral malady, which gave him very serious apprehensions. On the evening of the 7th of December, 1879, these indications of brain trouble were suddenly developed into an acute attack, which with great suffering ended his life in the short period of forty-two hours. To this only son his parents had looked forward, as a comfort and support in their advancing age. They had been proud of his abilities, and from his filial devotion, and as an appreciative exponent of his views, his honored father had hoped to have justice done to his labors, as an author, by one abundantly capable to give a proper exposure of those who had not hesitated to use his thoughts and occasionally his very language, while forgetting to give the slightest word of acknowledgment. It was not wonderful that the sudden death of this son, at the meridian of life, should have left results of no ordinary character. This sad event, so unlooked for, was a shock to the father, which did more to prostrate his health and strength than would have been done by years of customary labor. With his intimate friends he was still the same genial character, still interested in whatever concerned his profession or his fellow men; but he ceased to write, complained of what had formerly been a pleasure now becoming a toil to him, found his flesh wasting and his strength diminishing, and frequently

showed a sadness quite unnatural to him. Gradually he became less and less able to take his usual amount of out-door exercise, or to attend to the calls of professional business. From the early part of December, 1880, he remained in his house, still seeing his friends, interested in his books and in what was going on in the world and in his specialty, but steadily losing weight and strength. To avoid the fatigue of going up stairs, he ultimately made his library, in the second story, his lodging-room, and spent the greater part of every day at his front window in the adjoining apartment, reclining in an easy chair—a highly valued present, years before, from a beloved professional brother—and looking out from it upon what was passing on the active thoroughfare before him, and on the beautiful gardens of the houses opposite his residence. From his daily increasing weakness, his friends realized that the end must be near.

On the evening of the 31st of March, 1881, he retired at about the usual hour. After being in bed, he had one troublesome spell of coughing, but then slept quietly, only once in the early morning, inquiring the hour. So peacefully did he rest, and so calm was his sleep, that he made no sound of any kind, nor moved a muscle, as far as could be heard; and when approached somewhat later, there had been no change in his position, but life had departed, and only what was mortal remained of this noble and useful man.

Dr. Ray was a man of great versatility of talent. His ability as a writer is well known, and his conversational powers were remarkable. He had a great facility in adapting himself to any society in which he might be placed, and was equally agreeable to the grave professional man, or to the specialist, as to those of tenderest age, with whom he was usually a great favorite. While to a stranger, Dr. Ray's

manner might at first appear somewhat austere, this impression was removed by a very limited intercourse. By his intimate friends and associates he was specially honored and esteemed, and no one was more cordially welcomed in the social circle.

A list of Dr. Ray's writings, which has been preserved, shows how industrious an author he was, and how multifarious were the subjects in which he took an interest. From 1828, when his first publication of which any record has been kept, was made, down to 1880, during which year he furnished his last contributions to the press, it will be seen by the following list, that but a single year passed in which something original was not noted.

LIST OF THE PUBLISHED WRITINGS OF THE LATE ISAAC RAY, M.D., LL.D.

1828. Review of Lawrence's Lectures. American Quarterly Review, June.

1829. Conversations on the Animal Economy. 16mo. Portland.
Review of Bakewell's Geology. American Quarterly Review, September.
On the Origin of the American Aborigines. Yankee.
Address on Temperance. Eastport Sentinel, October.

1831. Review of Combe's Constitution of Man. Christian Examiner, July.

1832. Case of Emphysema Uteri. Boston Medical Magazine, October.

1833. Review of Testimony in case of alleged Murder. Boston Medical Magazine, July.
Reply to North American Review on the merits of Spurzheim. Boston Medical Magazine, November.
Case of Malformation of the Heart. Boston Medical Magazine, December.

1834. Review of Decandolle's Théorie Élémentaire. North American Review, January.
Review of Combe's Phrenology. Christian Examiner, May.
Review of Combe and Caldwell on Popular Education. Annals of Phrenology, November.

1835. Notice of case of Major Mitchell. Annals of Phrenology, November.
Lecture on Criminal Law of Insanity. American Jurist, October (No. 28).
Obituary of Dr. B. Lincoln. New England Magazine.
Translation of the fourth and latter half of the sixth volume of Gall's "Sur les Fonctions du Cerveau, etc."

1836. On the Criminal Law of Insanity, being a reply to G. T. C. American Jurist, October (No. 31).

1837. Homicidal Insanity. American Jurist, January (No. 32).

1838. Medical Jurisprudence of Insanity. 8vo. Boston.
Notice of Dr. Woodward's Report. American Jurist, October (No. 39).

1839. Notice of Pechot's Case. American Jurist, October (No. 43).

1840. Review of Mittermaier on Criminal Responsibility. American Jurist, January (No. 44).

1841. On Medical Evidence. American Jurist, January (No. 48).

1842. Report of Maine Insane Hospital for 1841.

1843. Report of Maine Insane Hospital for 1842.
Medical Jurisprudence of Insanity. Second edition. 12mo.

1844. Report of Maine Insane Hospital for 1843.

1845. Report of Maine Insane Hospital for 1844.
Review of Roger's Trial. Law Reporter, February.

1846. Observations on foreign Hospitals for the Insane. American Journal of Insanity, April.
Review of Trial of Abner Baker. American Journal of Insanity, July.
Review of Madness or Maniac's Hall. American Journal of Insanity, October.

1847. Shakspeare's Delineations of Insanity. American Journal of Insanity, April.
Criminal Law of Insanity. Law Reporter. May and July.
Illustrations of Insanity by distinguished English authors. American Journal of Insanity, October.

1848. Legislation for the Insane in Maine. American Journal of Insanity, January.
Description of Butler Hospital. American Journal of Insanity, July.
Contract contested on the ground of Insanity. American Journal of Insanity, October.

1849. Report of Superintendent of Butler Hospital for 1848.
Statistics of Insane Hospitals. American Journal of Insanity, July.
The Hinchman Case. Law Reporter, August.

1850. Report of Superintendent of Butler Hospital for 1849.
Project of a Law for regulating the legal relations of the Insane. Law Reporter, September.

1851. Report of Superintendent of Butler Hospital for 1850.
Epidemic Monomania. Christian Examiner, May.

Education in relation to the health of the Brain. 24mo. pp. 56.

Hints to Medical Witnesses. American Journal of Insanity. July.

1852. Report of Superintendent of Butler Hospital for 1851.

On the popular feeling towards Hospitals for the Insane. American Journal of Insanity, July.

Trial of Furbush. American Journal of Insanity, October.

1853. Report of Superintendent of Butler Hospital for 1852.

Medical Jurisprudence of Insanity. Third edition.

Undescribed forms of Acute Mania. American Journal of Insanity, October.

1854. Report of Superintendent of Butler Hospital for 1853.

American Hospitals for the Insane. North American Review, July.

Etherization in the treatment of Insanity. American Journal of Insanity, July.

1855. Report of Superintendent of Butler Hospital for 1854.

Notice of Tuke on Non-restraint. American Journal of Insanity, April.

Insanity of George III. American Journal of Insanity, July.

1856. Report of Superintendent of Butler Hospital for 1855.

Insanity and Homicide. American Journal of Insanity, January.

Review of Report of Commissioners on Insanity in Massachusetts. North American Review, January.

Review of Wharton on Mental Unsoundess. American Journal of Insanity, January.

1857. Report of Superintendent of Butler Hospital for 1856.

1858. Report of Superintendent of Butler Hospital for 1857.

Opinion in Parish Will Case.

Review of Buckle's History of Civilization. North American Review, October.

1859. Report of Superintendent of Butler Hospital for 1858.

Medical Testimony in jury trials. Law Reporter, July.

1860. Report of Superintendent of Butler Hospital for 1859.

Medical Jurisprudence of Insanity, fourth edition.

1861. Report of Superintendent of Butler Hospital for 1860.
Objections to Moral Insanity. American Journal of Insanity, October.

1862. Report of Superintendent of Butler Hospital for 1861.
Cerebral Dynamics. Atlantic Monthly, August.

1863. Report of Superintendent of Butler Hospital for 1862.
Discourse on Life and Character of Dr. Bell.
Doubtful Recoveries. American Journal of Insanity, July.
Angell Will Case. American Journal of Insanity, October.
Mental Hygiene, 16mo.

1864. Report of Superintendent of Butler Hospital for 1863.
Report on a Project of a Law for the Insane. American Journal of Insanity, July.

1865. Report of Superintendent of Butler Hospital for 1864.
Review of Redfield on Wills. American Journal of Insanity, April.
Case of Bernard Cangley. American Journal of Insanity, July.

1866. Report of Superintendent of Butler Hospital for 1865.
Insanity of Women produced by Desertion. American Journal of Insanity, October.

1867. Report of Superintendent of Butler Hospital for 1866.
Report on Insanity in Transactions of American Medical Association, Vol. XVIII.
Epilepsy—Homicide. American Journal of Insanity, October.
Articles in Bouvier's Law Dictionary, viz.: Apoplexy and Paralysis, Delirium Febrile, Delirium Tremens, Drunkenness, Insanity, Lucid Intervals, Mania, Somnambulism, Suicide.

1868. Review of Griesinger on Insanity. American Journal of Insanity, April.
Delusions considered as a test of Insanity. American Journal of the Medical Sciences, July
A Modern "Lettre de Cachet" reviewed. Atlantic Monthly, August.

1869. Review of Discussion on Moral Insanity. American Journal of the Medical Sciences, January.

Confinement of the Insane. American Law Review, January.
Hereditary Insanity. North American Review, July.

1870. Review of Ordronaux on Jurisprudence of Insanity, American Journal of the Medical Sciences, January.
Law of Insanity. American Law Review, January.
Trial of Andrews. American Journal of the Medical Sciences, April.
Prognosis of Insanity. American Journal of the Medical Sciences, October.
Mordaunt Divorce Case. Medical Times, October 15.

1871. Review of Blandford on Insanity. American Journal of the Medical Sciences, April.
Medical Jurisprudence of Insanity, fifth edition.
Habeas Corpus. Medical Times, April 15.
Pathological Psychology. American Journal of the Medical Sciences, January.
Opinion in Pidcock *v.* P., Pennsylvania State Reports, Vol. LXIX.

1872. Review of Fisher's Plain Talks about Insanity. Medical Times, May 1.

1873. Insane Convicts. Medical Times, March 22.
Legislation on Expert Testimony. Medical Times, March 29.
Review of Tuke's Body and Mind. American Journal of the Medical Sciences, April.
Review of Reynolds' Legal Tests of Insanity. American Journal of the Medical Sciences, April.
Contributions to Mental Pathology. 8vo.
Ideal Characters of Officers of a Hospital for the Insane.
What shall Philadelphia do with its Paupers? (Philadelphia Social Science Association.) Penn Monthly.

1874. Legislation for the Insane. Medical Times.
Review of Denny's Government of Insane Hospitals. American Journal of the Medical Sciences, July.
Review of Bucknill and Tuke on Insanity. American Journal of the Medical Sciences, October.
Homicide and Suspected Simulation. American Journal of Insanity, October.

1875. Duncan Will Case. American Journal of Insanity, January.
Review of Kroft Ebing on Responsibility of the Insane. American Journal of the Medical Sciences, July.

Ventilation of Hospitals. American Journal of the Medical Sciences, October.

London Lancet on American Management of the Insane. Medical Times, December 25.

Brain Disease and Modern Living (Philadelphia Social Science Association). Penn Monthly.

1876. Review of Morel's Works. American Journal of the Medical Sciences, January.

Review of Plans of Johns Hopkins Hospital. American Journal of the Medical Sciences, April.

Review of the Forty-sixth Report of the Inspectors of the Eastern Penitentiary. American Journal of the Medical Sciences, July.

1877. Review of Ordronaux on the Proper Status of the Insane. American Journal of the Medical Sciences, January.

Lecture on Testamentary Capacity. Sanitarian, October.

Review of Folsom on Diseases of the Mind. American Journal of the Medical Sciences, October.

The Responsibility of the Insane for their Criminal Acts. Transactions of the International Medical Congress of Philadelphia.

1878. Review of Tuke on Insanity and its Prevention. American Journal of the Medical Sciences, July.

New Hospital for the Insane. Medical Times.

Cost of Constructing Hospitals. Chicago Journal of Mental and Nervous Diseases.

Review of Clarke on Visions. American Journal of the Medical Sciences, October.

Notice of Billings's Report on Ventilation. American Journal of the Medical Sciences, October.

1879. Notice of Lindsay and Boddington on Restraint. American Journal of the Medical Sciences, January.

Parliamentary Commission Lunacy Laws. American Journal of the Medical Sciences, April.

Recoveries from Mental Disease. Transactions of the College of Physicians of Philadelphia. Third series, Vol. IV.

1880. Isolation of Persons in Hospitals for the Insane. Penn Monthly, January.

FOOT-BINDING IN CHINA.

AN ACCOUNT OF THE PROCESS AND ITS EFFECTS; AND A CORRECTION OF MANY ERRONEOUS STATEMENTS WHICH HAVE BEEN MADE, CHIEFLY BY TRAVELLERS, IN REGARD TO IT.

By

ROBERT P. HARRIS, A.M., M.D.

[Read December 3, 1879.]

Critically examined in all their various peculiarities, it may well be said that the Chinese are the most singular people upon the face of our globe: a composite nation, consisting mainly of two Mongolian races, the Manchu Tartars, or reigning power, and the Chinese proper, who have been conquered and subjected by them. To the former, belongs the custom of wearing the queue; and to the latter, that most singular, pernicious and unaccountable one, of binding the feet. The queue, although the evidence of subjugation, and originally forced upon the Chinese, has been adopted by them from taste, and is now universally worn. The foot-binding has never been accepted as a fashion by the Tartars, who allow the member to grow as nature intended it should.

The custom or fashion of dwarfing the feet of Chinese women by the use of a bandage first applied in childhood, is of so ancient an origin, that nothing reliable can be learned as to the date of its introduction, or the reason why it was ever commenced or founded.

It certainly dates back to a very remote period, possibly to the middle of the tenth century, as has been repeatedly claimed, with some show of truth: but the earlier claims of the Chinese, dating back to 1100 B. C., and before the Deluge—in regard to the existence of which, they have only tradition to rely upon—belong to their national credulity.

I will not attempt to give any of the various historical reasons for the origin of this fashion, as they are in the main simply conjectural: it is sufficient for our purpose to know that it is almost universal with the true Chinese throughout the empire, and that it comports with the taste of this singular people, and their idea of the beautiful; being adhered to with a tenacity that nothing short of an imperial edict will ever be likely to destroy.

Our antipodes, according to our ideas of taste, must have very strange conceptions of the ornamental and beautiful, as evinced in their carvings, bronzes, porcelain figures, paintings, and idols. The grotesque and the stunted, have a large share in their conception of what is worthy of admiration. A crooked, gnarled and dwarfed pine or oak tree, grown in a pot for one hundred or one hundred and fifty years, is one of their favorites. A lion, whose mane and tail are all that bear the least resemblance to the contour of the king of beasts, the rest being a contorted burlesque upon him, is a frequent and choice work of art. So likewise is the mythical dragon, and so is the uninviting toad; so are the reptilia, and numerous conceptions belonging to nothing in nature, except so remotely, that we are at a loss to tell exactly what was the prototype. This being the natural taste of the race, we can readily

conjecture with some show of foundation, that the custom of foot-binding came originally from a desire to imitate the natural deformity known as *talipes calcaneus*, to which it bears a close resemblance; the most remarkable question at issue being, how did they ever conceive the plan of bending the foot in the tarsus, without any knowledge of its anatomy, or of the power of the bandage? It must have been at first simply an experiment to imitate by art a physical ugliness, which in the eye of the operator was, as the Chinese now speak of it, "*very good looking.*"

The custom belongs to no special age or condition in life, being a matter of gentility and ability, rather than of wealth or rank. With the rich it is begun earlier, and is more universal, but with the poor in the heart of cities, it is as commonly practised as they can afford to have it; necessity alone preventing it from becoming universal. A large proportion of the inhabitants of the country have their natural feet, and in the suburbs of cities, the dwarfing practice is less common than in the densely built portions. There are sections where the fashion is said to have entirely died out within the past twenty years, as for example the villages bordering upon the Hakka country, and brought under its influence; the Hakkas not binding the feet, although in Tie Chiu, which adjoins it, the practice is said to be almost universal.

A common impression prevails, that the process is commenced in early infancy; and some have been taught to believe that the foot is encased in a strong shoe of leather or iron, and its growth thus arrested, without materially altering its form, the ankle being made to grow compensatively to a size much larger

than natural. I have seen within a few days a work containing, in illustration, a pair of minute but normally formed feet upon a Chinese woman, such as cannot be found in the whole empire, except in infancy. It has been also stated that the feet are bound with silk bandages, and that these, instead of removal, are often after a time encased by a new roll, which is also an error. It is possible that strong pongee may be sometimes used by the wealthy, but I have seen no reliable statement to this effect. The fact is, that a strong white cotton cloth is specially woven for the use of foot-binders, and is almost exclusively employed as the bandage material.

Among the wealthy, and those who can afford to have it done, the first binding takes place at the age of five, six, or seven, varying somewhat in different localities; thus, according to Dr. Flemming Carrow, of the Medical Missionary Society's Hospital of Canton, it is at five in that city: in Tie Chiu, on the authority of a teacher of a girls' mission school, it is at six or seven. I have no direct account from Ningpo, where it is said that the feet are reduced to a very small size, and it is probable that the inhabitants there may begin the process before five, if the size attained is correctly reported. To make otherwise a three and a half inch foot, from toe to heel, would seem an impossibility, as the adult heel alone is seldom under two inches in diameter. Chinese shoes may be of this length, or even less, but it is a common practice to wear them much shorter than the foot, the heel of the latter projecting an inch or more behind the end of the sole, and being covered with a long silk heel piece. I have within a few days

seen it stated by a traveller in China, that the feet of infants are bandaged at the age of three months, and that the suffering only lasts for six weeks; both of which statements are certainly incorrect.

The reason given for not binding until five or six years of age is, that the child must first learn to walk, and do certain acts, or kinds of work, in which walking is essential, or it will not be able to learn. Among the poor, children have the process commenced as soon as their parents can afford it, though as a general rule not before twelve, and seldom later than fourteen. Servants with very rare exceptions have their feet as nature made them, and these are often small and remarkably well formed, with a high arch and instep. Parents who through poverty have been obliged to sell a daughter as a family slave, are sometimes under improved circumstances enabled to buy her freedom, in which event her feet are bandaged, even if she has reached the age of twenty, so that she may obtain the badge of gentility, and be married as a lady.

Feet dwarfed at five or six years of age, are much more successfully done than those at twelve or fourteen, when the bones are larger and more matured, and the tarsal articulations more strongly united. The suffering increases also as the age advances, and the attempt in a grown girl is much the most severe, and accomplishes the least. In such cases, the toes are partially bent under the sole, and the heel and instep somewhat approximated, so that by a high inside heel and a little counterfeiting, the foot is dressed to appear small. Small feet advance the matrimonial recommendations of the owner, and parents having daughters thus crippled, are enabled to ally them

with more respectable or literary families, than if their feet were normal in size and form.

The process.—There are three points to be gained by the binding, which collectively, and under the influence of an atrophic action, the result of defective nutrition, make the feet small, and give the skin of both feet and legs a shrivelled appearance. The first step, and that to which the parts make the least resistance, is the bending of the four smaller toes under the sole of the foot, and the narrowing of the parts supported by the metatarsal bones. The second step is best accomplished in early childhood, when the tarsal bones appear to move with a joint-like flexibility upon each other; and consists in a forcing together of the plantar portions of these bones, whereby they are subjected to a continuous pressure, and in an opening, or rather attempt at opening, of the articular crevices of the instep, keeping their ligaments constantly tense, at the same time. The third step is the last to be accomplished, and can only be completed in the young subject. The os calcis, with the astragalus, is forced downward until the heel is vertical, and its bone on a line with those of the leg. The calcis is rounded in form, losing its processes, which are so marked in the normal bone; and its anterior articulating face is brought up near to the high, instep-like arch just in front of the ankle-joint, while at the same time the point of attachment of the tendo Achillis is made the base upon which the girl stands when erect, and steps in walking.

The bandage at first is about six feet in length; and a width of about two inches is generally used at all ages. The end of the roll is placed on the inside of

the instep, and the strip is then carried over the four smaller toes, taking them with it under the sole of the foot: the bandage is then brought around the big toe, over the instep, and along the outside of, and then around, the heel, to the point of starting, when another turn is made over the toes, and the foot is compressed longitudinally so as to extend the front part, and bend the heel approximatively toward it. This figure-of-eight binding is continued to the end of the bandage, which is then sewed to the turn beneath it, and the child left to endure the torture without removal of the pressure for a month.

When the first dressing is to take place, the feet are put to soak for a long time in water as hot as can be borne by the hand, and the bandage is then slowly unwound. The uncovered foot presents an abundant exfoliation of dead cuticle; is often ulcerated from the pressure; always bleeds; and sometimes is affected with a circumscribed gangrene, by which one or two toes are lost, and portions of skin and subcutaneous tissues are separated. The sloughing out of a portion of the infolded sole is not uncommon, but the loss of toes is said not to occur in more than one or two instances in a hundred. The odor of such a foot when unbound, can be better imagined than described: even when well, the feet are anything but pleasing objects to the sight and olfactories of an "*outside barbarian.*" At the first binding, and in many cases throughout life, finely pulverized alum is placed under and between the toes, and in the creases of the sole, to harden the skin, prevent ulceration, and lessen the offensive odor, which is very marked on passenger

boats, and wherever a group of Chinese women is assembled.

After the first ablution, the parts are dried, dusted with alum, the toes still more pressed under the sole, the foot kneaded to make it more flexible, and a clean bandage quickly applied before the foot can have an opportunity to recover its true form and swell out, for the rebinding in that case becomes much more severe.

The shaping of the foot by the bandage requires from two to three years, during which period there is more or less pain. This is most severe in the first year, and gradually diminishes after the bending of all the joints and articulations is completed. During this period, and in fact throughout life, the feet are unbound but once a month.

The suffering at first is very severe, and is located chiefly in the toes, joints, ankle bones, and instep, and is compared by those who have endured it, to that produced by the puncturing of sharp needles into the flesh. At night the girl lies across her bed, putting her legs over the edge of the bedstead, so as to make a pressure under the knees, and thus benumb the parts below them. In this position, on her back, swinging her legs backward and forward, she passes many a weary night. Febrile disturbance is said to be an accompaniment of this torturing process.

If the feet are firmly bound, and the girl young, they will cease to ache generally in about two years, the parts being then denominated "*dead.*" By this time the calf of the leg, for want of use, has disappeared, the skin is shrivelled, and the whole extremity below the knee presents an atrophied and shrunken appearance, being little more than skin and bone.

The bones eventually become attenuated, and the ankle measurement of a dwarf-footed woman is about the same as that of her wrist. In adult life, the leg frequently becomes rounded and enlarged by adipose deposit, and the muscles regain their form in a measure; but the ankle always remains small.

A girl under the process of foot-dwarfing seldom walks within a year, but moves about the house on two stools placed under her knees, first sliding one forward while she throws her weight on the other, and then alternating the movement. If she goes out, she is usually carried on the back of a strong woman. A dwarf-footed woman hobbles along with short, quick steps, bearing her weight mainly on her heels, and balancing herself with her arms, or leaning upon a malacca cane, or the arm of some one with normal feet. She is unfitted for an active life, although some with great effort can walk six or seven miles in a day. The toes that are turned under the feet, become flattened when walked upon, and the fourth and fifth are deeply imbedded in the sole, and often present corns at points most subjected to pressure. Such feet blister easily, and are subject to frequent abrasions, which, from the necessity of always wearing the bandage, are very difficult to heal. To take off the weight from the anterior part of the foot, the heel is made to rest upon an elevating block, or high insole and boot-heel. Where the dwarfing has been commenced very early, the heel of the foot is not much elevated above the level of the sole; but in those bandaged late, the difference of level is sometimes an inch, or an inch and a half.

A Chinese woman of the better class is averse to

showing her feet in a bare state, even to members of her own household; and seldom exhibits more than the heel and an inch of the toe when they are dressed; covering the balance with a pantalet tied at the ankle. Very few Americans in China, except physicians and female missionaries engaged in teaching young girls, ever see even a bandaged foot, although frequently meeting those who have them. A gentleman who has resided two years in China, told me, a few days since, that he had never even seen the toe of one of their shoes in walking, so carefully were the feet covered by the clothing. Women of the lower class, however, in some districts, appear to take a pride in showing their feet to strangers, when well introduced.

Fig. 1.

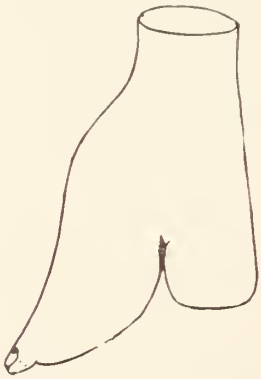


Fig. 2.

Fig. 1.—Represents the usual form of a foot in which the dwarfing process has been commenced at an early age. The original measured 4½ inches from toe to heel.

Fig. 2.—Sole of left foot of same length; showing how entirely the four smaller toes may be forced under the metatarsal arch.

Anatomical changes.—These are shown both externally, and by dissection. Three of the casts sent from Canton, measure four and a half inches from heel

to toe, and one, four and three-quarters. Dr. Carrow writes that these are larger than the feet were when first unbound, as the parts swell and relax somewhat when relieved from pressure. The most marked changes noticeable, are the bending under of the toes, and especially the disproportionate size and length of the fifth toe, which reaches the central line of the sole, and sometimes extends beyond it; the deep indentation between the heel and the sole proper, which gradually closes under the binding until it appears as a mere fissure, in which, when perfected according to

Fig. 3.

Fig. 3.—Shows the deformity of the bones, in foot represented by Fig. 2.

Chinese taste, a silver dollar may be entirely hidden when pushed in edgewise, showing this plantar fissure to be an inch and a half deep; the vertical direction of the heel, with its flattened base, and square edges; the extreme height and prominence of the instep; the position near the back of the ankle of the external malleolus, and its very slight elevation; and lastly the diminutive size of the ankle itself.

Dissections have been made of these deformed feet

by Mr. Bransby B. Cooper, and others, and it will be sufficient to refer to Mr. Cooper's statement and drawing in the Transactions of the Royal Society of London, for 1829. The foot examined was that of a woman of the lower class, found floating, dead, in the river at Canton; and was sent as a present to Sir Astley Cooper. It was a fair specimen of the deformity, but not equal to those from which the casts by Dr. Carrow were taken, as it measured five and a quarter inches in length, and had a turned up great toe. Poverty had no doubt compelled the woman to walk on both heels and toes, bending back the big ones, and making callosities on their balls and several corns on the smaller toes. The position of the latter corresponded with those on the adult cast here exhibited, and the form of the os calcis, with that of the skeleton foot before us, obtained by Dr. Kerr at Canton.

The instep of Mr. Cooper's specimen was three and a half inches in height; the arch beneath, two inches, and its span two and a quarter inches; width of foot at broadest point, barely two inches. The tendons did not appear to have undergone any change. The curve of the instep at its most prominent part was made by the round head of the astragalus and the cuboid articulation of the os calcis. All of the tarsal bones were more or less altered by the compression, and the tarso-metatarsal junctions bent anteriorly.

Dr. Gordon, in his "China from a Medical Point of View," advanced the opinion that the binding process was a fruitful source of disease, and mentioned particularly scrofula, and a carious state of the tarsal bones. Mr. S. Wells Williams, in his "Middle King-

dom," gives a very different statement, in these words: "The practice of compressing the feet, so far as investigation has gone, is more an inconvenience than a dangerous custom, for among the many thousands of patients who have received aid at the missionary hospitals, few or none have presented themselves with ailments chargeable to this source." . . . "The evident freedom from distress exhibited in the little girls who are seen walking or playing in the streets proves that the amount of suffering and injurious effects upon life and health, resulting from this strange fashion, are perhaps not so great as has been imagined." . . . All the women seen by Mr. Stevens in Shantung, and all who came to the hospital at Chusan in 1841, to the number of 800 to 1000, had their feet more or less cramped, and some of them walked several miles to the hospital, and home the same day. Mr. Williams was for a number of years the Senior Vice President and acting President of the Medical Missionary Society, which has established many hospitals and dispensaries in China, and he ought to be good authority.

A search through the Chinese hospital reports, for a number of years, only tends to confirm the statement of Mr. Williams. There was no case of caries of the tarsal bones reported, and no indication that foot-binding induced scrofulous disease in any of the parts under compression. Dr. Peter Parker reports one case of gangrene produced by the first binding, as follows:—No. 23,944. A little girl of Honan, Luh Akwang, æt. 7, was subjected to the process of foot-binding on Feb. 9, 1847. Her sufferings from the compression were very severe, and became so in-

tolerable, that at the end of two weeks her parents very reluctantly took off the bandages. Her toes were found discolored by commencing gangrene, and this advanced until both feet were involved. She was in this condition when brought to the Canton Hospital on March 8. Both feet became black; a line of demarcation formed at the ankles, and spontaneous amputation resulted; the stumps were treated at home, and she made a good recovery. Dr. Parker states in the report, that since he had seen this case he had heard of several others.

Gangrene from exposure to severe cold is an occasional occurrence. We might very naturally expect this to be quite common, but it does not appear to have been so by the hospital reports. Two cases are mentioned, both in the report of the Canton hospital for 1874. A woman of Pwanyü, æt. 53, lost both her feet in this way, and they separated about three inches above the ankle-joint. After her recovery she gave her feet to Dr. Kerr, who presented one of them to the Mütter Museum. The second case is that of a girl of six, the daughter of a wealthy man residing in the suburbs of Canton: one foot separated above the ankle before her admission, and the other a few days afterward. The cold was unusually severe at the time, so much so that a man in the same locality had his extremities badly frozen. Facts are better than conjecture, and especially with regard to the Chinese. What we feel sure would happen if American children were thus foot-bound, we must not presume to be the case with those of the Chinese, a nation that is but little subject to pyæmia, erysipelas, and traumatic gangrene.

The power of the bandage is well shown in the foot-binding process, and teaches us a lesson in orthopædic surgery. If deformity is thus produced, the opposite may be, where the same is presented for treatment and removal. The *splay-foot* is the converse of the Chinese deformity, and might be removed by the same, or a modification of the same, method, and so of other unsightly or disabling natural defects of the feet.

One of the most singular results of the foot-binding is the extreme attenuation of the leg from the knee downward, involving as it does both bones and muscles. The latter are affected chiefly from want of use, the shrinkage of the gastrocnemius being most apparent; and the former appear to retain their childhood dimensions, or are reduced to even less than this, the tibia and fibula being no thicker than the radius and ulna, as shown in the dried foot here presented. Where the binding is commenced very early, this condition is much more marked than in the cases of the poor in whom it is begun at a much more matured age.

The effect upon the emotional nature of the Chinese has been dwelt upon by some writers, who claim that the foot-binding changes the entire character of its victims, and gives even a peculiar expression to their features, bringing them in marked contrast with those in whom the feet have not been compressed. This is attributed to the sufferings of the formative period, and the life of forced inactivity which it entails as a result. No doubt the want of open-air exercise is a considerable drawback to the measure of health of the small-footed women, and renders them in many

instances less cheerful than those whose locomotion has not been curtailed, and is not attended with more or less suffering throughout life. It would be interesting to know what is the true effect of this condition in determining disease in its subject in childhood and adult life: but of this as yet I have not been informed, and I see no reference to it in the Missionary Hospital reports.

We have now, in the collection of the Mütter Museum, the dried foot already referred to; a cast of a half-dwarfed foot remarkable for the extent of the underlapping of the toes and pointing of the anterior part of the foot, the heel-to-toe measurement being six and three-quarter inches; a model of a four and a half inch foot; a second miniature model of a bandaged foot with shoe and ankle-cover; and four casts of feet taken at the ages of six, thirteen and fourteen years, and in adult life, the first three being four and a half inches long, and the last four and three-quarter inches. These give a fair representation of the whole process of binding, and of its effect upon the form and size of the foot. For these we are much indebted to Drs. John G. Kerr and Flemming Carrow, of the Canton Hospital.

NOTE.—Since the above paper was put in type, I have seen a lady from Ningpo, who was engaged in teaching a mission school, in which there were twenty-six girls, all having bound feet. She says that the custom is, in one respect, quite different in Ningpo from what it is in Canton and Swatow, and that in consequence the feet are made much smaller. She has never seen an unbound foot, although anxious to do so, but could never persuade one of the girls or women to remove the bandage. When dressed, and with

the embroidered shoe on, they make no concealment of their little feet. Binding is begun in infancy at Ningpo, and not at five, six, or seven years, as in Canton, Swatow, Tie Chiu, and, as a rule, in Southern China. The bandage used, is only about half the width of that in Swatow, or about an inch wide, and the tail of the strip is wound around the heel-piece of the shoe, which is put on before the binding is completed. The time when the first binding is done, she cannot state exactly, but she has often seen very small children with bound feet, carried about by their mothers—the youngest being certainly not more than thirteen months old. I have already stated that the Ningpo ladies are said to have the smallest feet in China; which is thus accounted for, as I presumed might possibly be the case. My informant saw the casts now in the Mütter museum, when at Dr. Carrow's house, in Canton, and was struck with their large size, as compared with the feet she had so often seen under shoe and bandage in her own school. She says that, in Ningpo, the bandages are removed from the feet every two weeks; but that even with this more frequent change, the odor in a closed school-room is enough to sicken the stomach of an American or European, and a very free ventilation is essential to the comfort of the teacher. She also says that scrofula is very common among the Chinese, but she has never seen it as a result of the foot-pressure; in which she confirms the opinion, before quoted, of Mr. Williams, now a Professor in Yale College.

In consequence of the very early foot-binding in Ningpo, which is almost universal in the city proper, women are much more rarely seen in the streets than at Canton and Hong Kong, and have a greater difficulty in walking; their step being like that of one upon stilts. Their feet are more upon a level than those bound at five or six, and the women wear a much lower heel than in Canton.

ACCOUNT OF A CASE IN WHICH HEART-CLOT OCCURRED AS A CONSEQUENCE OF URÆMIC CONVULSION AND TUMORS IN THE HEART.

By

ARTHUR V. MEIGS, M.D.,

PHYSICIAN FOR OUT-PATIENTS TO THE PENNSYLVANIA HOSPITAL, ASSISTANT PHYSICIAN TO THE CHILDREN'S HOSPITAL, ETC.

[Read December 3, 1879.]

L—— F——, aged 38 years, born in New Jersey, married, a pedler by occupation. Admitted to the medical ward of the Pennsylvania Hospital on August 7, 1879, he states that his health has not been good for three or four years past; during that time he has been troubled with frequent micturition, and has had attacks of asthma. He would have an attack during the night, and be able to go about again as usual in the morning. Once his feet and legs swelled. There can be no distinct history of convulsions obtained, although he has frequently had what he calls "spells." He denies ever having had syphilis. The night before admission, he fell in a convulsion, which was followed by stupor lasting a considerable length of time.

On admission, the patient was almost collapsed, the skin being blue, the extremities and face cold. He was retching and vomiting violently, and was at once put to bed, when the vomiting soon ceased, although he continued cold and blue. The heart's action was excessively slow and irregular, there being, when the patient first came into the ward, two or three respirations taken for each beat of the heart. His intelligence was perfect. He was ordered on no account to raise himself in bed, and was given milk punch every half hour, for the first hour or two, afterwards to be continued

regularly every hour, and a hypodermic injection of $\frac{1}{120}$ of a grain of atropia with $\frac{1}{6}$ of a grain of morphia. This was to be repeated at night if necessary. There was a loud, blowing, systolic murmur heard at the apex of the heart. The urine upon examination was found to be acid, sp. gr. 1030, and contained a slight amount of albumen. The microscope showed white and red blood-corpuscles and hyaline casts. P. M. Pulse, 30; respiration, 20.

August 8. He is very much as yesterday, except more calm and quiet, and the vomiting has entirely ceased. The pulse is excessively slow, and he complains of frequently feeling faint, when things swim before him. He is still deeply cyanosed, and the extremities are cold. Ordered infus. digitalis f℥ij, three times daily. The murmur heard over the heart is still loud at the apex, but now seems to extend more towards the base, and is rushing or rasping in character, louder towards the second right costal cartilage than at the apex, and very curiously prolonged. A. M. Pulse 34, resps. 20, temp. 100°; P. M. pulse 36, resps. 18, temp. 98°.

August 9. Continues in much the same condition, and has frequent syncopal attacks. Ordered five grains of carbonate of ammonium every two hours. A. M. Pulse 40, resps. 18, temp. 98°; P. M. pulse 36, resps. 18, temp. 98°.

August 10. A. M. Pulse 36, resps. 18, temp. 98½°; P. M. pulse 36, resps. 18, temp. 98°.

August 11. Pulse 36, resps. 16, temp. 97½°; P. M. pulse 38, resps. 18, temp. 97½°.

August 12. Pulse 36, resps. 18, temp. 97½°; P. M. pulse 36, resps. 16, temp. 98°. Since the last note the patient has continued in the same condition until this evening, when, without other warning, he shrieked and died almost instantly at half-past seven.

A post-mortem examination, made about sixteen hours after death, showed the rigor mortis very well established. The lungs were congested, and showed emphysematous spots along the margins, and some œdema of the lower posterior parts. The heart was much dilated, and weighed, when the

clots were removed, one pound one and a half ounces. In the right auricle, a clot was attached in the auricular appendage, and extended through the tricuspid orifice, partly red and partly white, principally white, however, and red at its ends. In the septum there was a mass as large as a walnut,

Fig. 1.

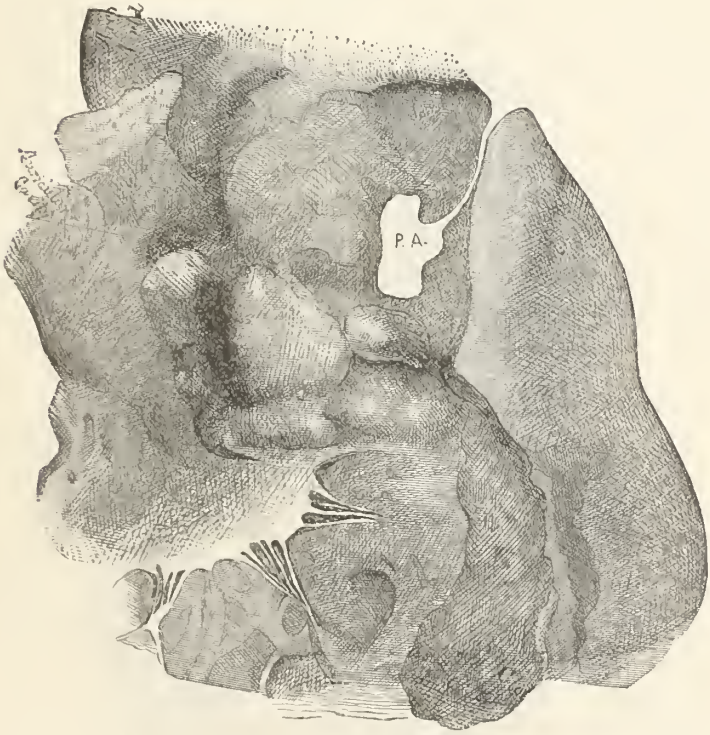


Fig. 1.—Shows tumor lying in auriculo-ventricular opening, above one of the leaflets of the tricuspid valve.

half in the auricle and half in the ventricle. The leaflets of the tricuspid valve were normal in thickness, but showed a few small yellow patches. The right ventricle was dilated, and a long, tough, yellowish-white clot was attached to the columnæ, and extended out into the pulmonary artery. This clot was about three or more inches long, and its end divided

as though it had extended into the right and left pulmonary arteries. Unfortunately it was cut off in taking the heart out, so it was not ascertained how much longer the clot may have been. The pulmonary valves were natural. The left auricle was studded with yellow patches, and in the septum

Fig. 2.

Fig. 2.—Shows tumors lying below cusps of aortic valves.

(as in the right heart, and probably the same mass) there was a large, yellow, irregular, knotted-looking tumor lying in the auriculo-ventricular opening, and even larger than that seen in the tricuspid opening. The muscular tissue was pale and

soft. The edges of the mitral valves were thickened, and there was a large knob lying under one of the cusps. The aorta was thickened and almost sacculated, so irregular was its shape, and covered with a yellowish-looking deposit. The aortic valves showed slight yellowish patches, but were not materially thickened; the noduli Arantii were large, particularly one of them. There were large nodes under two of the leaflets of the valve, one of them being the size of a large bean, but they did not appear to have interfered with its action. The chordæ tendineæ and columnæ carneæ of the mitral valve were enlarged and thickened. The liver was enlarged, congested, and thickened; weighed four pounds three ounces. The spleen slightly enlarged and hardened. The kidneys enlarged, very red, congested and fatty. The capsule peeled off with some slight difficulty, and the surface underneath was mottled with stellate veins and small white spots; weight of the two together fourteen and a half ounces.

I have received the following notes from Dr. J. H. C. Simes, who examined sections of the heart tumor, the clot, and the kidney:—

"An examination with the microscope of the sections of tumor removed from the heart, demonstrates a histological structure consisting of a number of nodules, which are recognized as such by their central part being in a state of granular metamorphosis; surrounding these nodules, the internodular tissue is seen to be composed of an embryonic tissue in several phases of development; that is to say, there are found small lymphoid cells, oval cells, fusiform cells, and a varying amount of intercellular substance, either as granules or distinctly fibrillated. It is in the tissue around the periphery of the nodules, that the bloodvessels are seen. They are quite numerous, and have a distinct lumen free from granular detritus. The above description corresponds to a gumma."

"An examination of sections of the kidney from the case of heart tumor, shows the parenchymatous cells lining the tubuli to have undergone a granular, fatty degeneration; in many of the tubules this metamorphosis is of such an extent that the cells have refused to take the carmine staining; in the majority the nucleus is invisible. Many of the tubules are entirely devoid of their cellular lining. Between the tubules, the inter-tubular connective tissue is present in increased amount, constituting distinct bands of fibrillar tissue. The capillaries forming the Malpighian tufts are, in a few of the glomeruli, evidently beginning to undergo the albuminoid transformation, which is manifest by the hyaline or vitreous appearance of their wall. The larger bloodvessels, the arteries, present an increased thickness of their wall, due to fibrous tissue. The examination would indicate a pathological condition of fatty degeneration, with interstitial nephritis and beginning albuminoid infiltration of the bloodvessels. The diseased condition, from the appearance given by the organ, I would infer to be of a chronic nature. The section of clot sent for examination is composed of a granular substance with an indistinct fibrillation, such as we might expect to find in a fibrinous coagulum. There are no cellular elements to be seen in the section. I would consider the clot to be of *ante-mortem* formation."

Dr. Morris Longstreth, the Pathologist of the hospital, also writes "in regard to the tumor of the heart, I incline to think it must be a gumma."

When I first saw this man, and heard such history from him as he was able to give, I looked upon his case as one of uræmic convulsion, and thought his collapsed condition and very weak and slow heart-beat might be caused by the uræmic poisoning. Upon after-thought, however, and more particularly upon finding him the next day still in a condition of such profound prostration, almost collapse, I thought that

the main lesion must lie in the heart, and what could cause such a condition but a heart-clot? More careful inquiry being made into his history, it was found that he had had an undoubted uræmic convulsion, with its usual stupor following, and had ever since been in the profoundly weak, semi-syncopal condition in which we first found him, and in which he remained until he died. The extreme cyanosis and frequent attacks of faintness, taken in connection with the excessively slow and weak action of the heart, and the very peculiar murmur which was heard, convinced me that he had a heart-clot following upon the uræmic convulsion. The murmur seemed at first to be loudest at the apex of the heart, and was systolic in point of time, but afterwards became louder toward the base, and very prolonged. The condition of the kidneys, as the microscopic examination showed, was of some standing; their deep congestion being caused by the heart lesion, which occasioned an almost complete stagnation of blood in all the internal organs.

I did not mention, in the notes, that the clot in the pulmonary orifice looked as if it had been formed as a hollow tube; this would be in accordance with what should be expected, for Dr. B. W. Richardson says, in his book on the Coagulation of the Blood, that clots forming in the direction of the blood-current are generally hollow, while those forming against it are generally piled up, layer upon layer, in the form of a solid cord. This clot seemed to me to have begun in the right ventricle, and to have gradually extended itself out into the pulmonary artery. This view is borne out by the form of the clot, and by the fact that the murmur seemed to become louder toward the base

of the heart as time went on. It is an interesting question, but one I think impossible to decide, whether in this case the heart or the kidney lesion was the primary one. The case is unusual from the size of the tumor in the septum of the heart, and the mode in which death finally occurred. There was of course no one particular symptom or group of symptoms that led to the diagnosis of heart-clot during life. Dr. Richardson observes that "there are sometimes abnormal sounds, but it is difficult to distinguish these from murmurs, the results of valvular lesion. The tumultuous action of the heart, taken with the general symptoms, is always a valuable diagnostic mark of concretion of the left side; but this is compatible with other diseased conditions. The weak irregular action is, with the general symptoms, a valuable diagnostic sign of concretion of the right side; but it is equally compatible with other causes . . . . . The diagnosis must, therefore, rest on the general symptoms, rather than on the physical. The nature of the case must first be considered." My case is unusual from the fact that life was so prolonged, after the formation of the concretion in the heart. The man was five full days in the ward before he died, and the clot had probably existed for about twelve hours previously, making in all five days and a half. The tumor also, as the Fellows will observe, is a very large one, and yet it did not prevent the man's pursuing the laborious occupation of a pedler.

For the drawings which illustrate this paper, I am indebted to the skilful pencil of Dr. John M. Taylor.

After the reading of the preceding paper, Dr. JOHN B. ROBERTS said:—

The specimen of tumor of the heart, just presented, recalls to my mind a similar pathological condition, which I saw two years ago, when assisting a friend in making the autopsy of a man who had died during a severe paroxysm of angina pectoris. The examination was made under circumstances leading us to carry away the heart without making a careful examination of the other organs. The pericardium contained about one fluidounce of serum; and opening the heart cavities disclosed numerous tumors occupying the wall of the right ventricle, which was dilated. The largest growth was about the size of a chestnut. The tumors occupied the septum near the auricular opening, binding down one leaflet of the tricuspid valve, and the outer wall of the cavity. These appeared to be immediately under the endocardium, while other growths, near the apex, infiltrated the thickness of the wall, and showed discoloration externally. The valves were healthy, except as mentioned above, and the muscle of the heart was somewhat degenerated. The growths were determined to be sarcomatous by examination made by competent microscopists. Whether or not similar growths existed in other organs was, unfortunately, not determined.

Dr. Ingram had seen the man in previous attacks of angina, and had auscultated the heart a number of times, both during and between the paroxysms. He had detected no murmur, but had observed a peculiar, muffled character of the heart sounds.

These two instances of heart tumor are interesting on account of the rarity of the condition, the similarity of location in the right ventricle, and the difference in symptoms and in character of growth. In one case there was great slowness of the pulse, and convulsions: in the other no slowness of circulation, but severe angina. In both instances death occurred suddenly.

REPORT

OF THE

COMMITTEE ON METEOROLOGY AND EPIDEMICS FOR THE YEAR 1878.

By

RICHARD A. CLEEMANN, M.D.,

PHYSICIAN TO ST. MARY'S HOSPITAL, AND MEMBER OF THE BOARD OF HEALTH OF PHILADELPHIA.

[Read December 3, 1879.]

METEOROLOGY.[1]

Temperature.—Last year I called attention to the comparative mildness and equableness of the temperature in Philadelphia, during the year 1877, and now I can do the same thing even more emphatically for 1878.

The mean temperature for the whole year, calculated from the monthly means, was 54.7° F. (Table A), or a rise of 2.2° F., above the average of the previous seven years (Table B). All the months, save those of June, the mean temperature of which was 67.9° F., as much as 3.6° F. below the seven years' average, and August, with a register of 73.4° F., a fraction below its mean, were warmer than usual, though in May, July, and December, respectively, the excess of heat was only slight. January had a record of 32.7° F., or 1.3° F.

[1] The data for this part of the report have been obtained from the records of the office of the U. S. Signal Station in Philadelphia.

TABLE A.—METEOROLOGICAL ELEMENTS OF THE CLIMATE AT PHILADELPHIA FOR 1878.

Furnished by C. A. Smith, Observer, S. S. C., U. S. A.

Date, 1878.	Barometer. Mean of Local observations.	Barometer. Mean of Telegraphic observations. Corrected for temperature, error, and elevation. A. M.	P. M.	Midnight.	Corrected for temperature and instrumental error only. A. M.	P. M.	Midnight.	Barometer. Range. Highest.	Lowest.	Difference.	Thermometer. Mean of Local observations.	Mean of Telegraphic observations. A. M.	P. M.	Midnight.	Range. Maximum.	Minimum.	Difference.	Mean relative humidity. Local observ. (per ct.)	Wind. Prevailing direction.	Number of miles. Noon to 6 P.M.	6 P.M. to midnight	Midnight to 6 A.M.	6. A.M. to noon.	Total.	Maximum velocity during the month.	Amount of rain or melted snow. (Inches and hundredths.)	No. of days on which rain or snow fell.	Number of auroras.
Jan.	30.075	30.102	30.051	30.057	30.048	29.998	30.013	30.727	29.432	1.295	32.7	30.0	35.9	32.0	52	12	40	77	S. W.	2624	2067	1870	2444	9005	52	3.94	12	One.
Feb.	29.976	30.000	29.947	29.984	29.947	29.891	29.931	30.360	29.376	0.984	36.6	32.6	41.4	35.8	58	12	46	72	N. W.	2020	1534	1671	1911	7136	36	1.64	7	None.
March,	29.984	30.009	29.947	29.978	29.947	29.896	29.927	30.530	29.167	1.363	46.4	42.6	51.6	44.9	69	16	53	66	S. W.	2825	1983	1795	2239	8842	40	2.89	12	"
April,	29.809	29.865	29.804	29.845	29.815	29.754	29.794	30.328	29.252	1.076	55.9	51.3	62.2	53.3	78	41	37	66	N. W.	2225	1525	1557	2059	7366	40	2.55	12	"
May,	29.939	29.966	29.909	29.951	29.916	29.860	29.901	30.266	29.592	0.674	61.0	57.2	66.4	58.7	82	41	41	62	N. W.	2502	1370	1212	1912	6996	37	3.29	10	"
June,	29.942	29.958	29.908	29.949	29.909	29.859	29.900	30.205	29.451	0.754	67.9	64.4	73.6	65.3	90	49	41	68	N. E.	2176	1541	1512	2058	7290	34	3.66	10	"
July,	29.968	29.987	29.926	29.977	29.935	29.879	29.925	30.193	29.566	0.627	77.3	74.1	84.1	73.8	97	64	33	67	S. W.	1965	1695	1347	1705	6712	36	4.35	8	"
Aug.	29.935	29.948	29.901	29.942	29.899	29.853	29.893	30.202	29.639	0.563	73.4	70.9	79.3	70.9	89	58	31	70	S. W.	1881	1336	1063	1552	5832	48	3.83	7	"
Sept.	30.153	30.179	30.119	30.158	30.129	30.070	30.107	30.508	29.724	0.784	67.9	64.4	73.2	65.5	88	44	44	72	N. E.	1817	1449	1436	1774	6476	36	0.96	12	"
Oct.	30.053	30.087	30.017	30.054	30.036	29.967	30.003	30.404	29.206	1.198	58.1	53.8	64.7	55.5	80	38	42	62	S. W.	2336	1827	1789	2406	8358	75	2.04	9	"
Nov.	29.991	30.014	29.982	30.008	29.961	29.918	29.956	30.556	28.973	1.583	44.8	41.4	48.8	43.4	62	28	34	66	W.	2278	1699	1926	2166	8069	38	2.19	9	"
Dec.	30.018	30.057	30.015	30.018	30.003	29.962	29.965	30.534	28.797	1.737	34.5	32.3	36.3	31.0	62	13	49	70	W.	2462	1944	2108	2414	8928	63	3.19	10	"
Sums,	359.843	360.172	359.526	359.931	359.545	358.907	359.315	364.813	352.175	12.638	656.5	615.0	717.5	633.1	907	416	491	818	....	27.111	19.973	19.286	24,640	91,010	535	34.53	118	1
Ann. means	29.987	30.014	29.960	29.994	29.962	29.909	29.943	30.401	29.348	1.053	54.7	51.2	59.8	52.7	75.6	34.7	40.9	68.2	S. W.	2259.2	1664.4	1607.1	2053.3	7584.2	44.6	2.88	9.8	

above its average; but greater increments were found in February and the earlier spring months, the former marking 36.6° F., or 4° F. above its average, March 46.4° F., as much as 8.2° F. beyond its usual figures, and April 55.9° F., surpassing its average 7.3° F.; September had a mean temperature of 67.9° F., October 58.1° F., and November 44.8° F., markings above their respective averages of 1.6° F., 2.7° F., and 1.7° F.

In general terms, then, the seasons may be described as a mild winter, an early spring, a late summer, and a warm fall.

The range of temperature during the year extended through 85° F., the lowest point reached by the mercury being 12° F., which event took place twice, once in January and once in February; and the highest 97° F., as occurred in July. Among the several months, March was distinguished by the greatest range, 53° F.; next in order came December, varying 49° F.; and then February, 46° F.; the colder months, therefore, except January, showed as usual the widest differences of temperature. The most equable months, also following the general rule, were August, ranging 31° F., and July, varying 33° F. The temperature in April and May, however, was steadier than common, ranging in these months through 37° F. and 41° F. respectively; in January the case was similar, as hinted above, the extremes in this month being 40° F. apart, instead of the average range of 48.7° F.; November too was unusually equable, the variation being 34° F. instead of more than 44° F. The other fall months, on the other hand, especially September, exceeded their accustomed

TABLE B.—COMPARISON OF METEOROLOGICAL ELEMENTS OF THE CLIMATE AT PHILADELPHIA, FOR THE YEARS 1872, 1873, 1874, 1875, 1876, 1877, AND 1878, WITH MEANS.

Month	Meteorological elements.		1872.	1873.	1874.	1875.	1876.	1877.	1878.	Mean of 7 years.
January.	Thermometer.	Mean.	29.4	28.9	36.7	26.1	37.7	28.4	32.7	31.4
		Range.	43.0	60.0	55.5	49.5	52.0	41.0	40.0	48.7
	Mean barometer.		30.053	30.113	30.193	30.231	30.161	30.063	30.075	30.127
	Mean humidity.		.....	.....	70.7	71.0	70.0	76.0	77.0	72.6
	Rainfall.		.95	5.84	4.53	2.83	1.52	2.62	3.94	3.18
February.	Thermometer.	Mean.	31.2	29.8	33.2	26.1	34.0	36.9	36.6	32.6
		Range.	45.0	50.0	64.0	58.0	56.0	44.0	46.0	52.0
	Mean barometer.		30.011	30.016	30.174	30.131	30.131	30.084	29.976	30.074
	Mean humidity.		.....	.....	67.7	66.0	69.0	64.0	72.0	67.4
	Rainfall.		1.12	4.75	2.46	3.20	5.03	0.84	1.64	2.72
March.	Thermometer.	Mean.	32.1	39.1	40.0	34.9	37.4	38.2	46.4	38.2
		Range.	52.0	53.0	48.0	49.0	57.0	52.0	53.0	52.1
	Mean barometer.		30.054	30.001	30.022	30.104	30.040	30.001	29.984	30.026
	Mean humidity.		.....	.....	64.0	69.0	68.0	68.0	66.0	66.8
	Rainfall.		3.67	2.04	2.16	3.10	6.71	3.40	2.89	3.42
April.	Thermometer.	Mean.	51.6	45.3	42.5	45.5	49.1	50.0	55.9	48.6
		Range.	54.0	35.0	46.5	51.0	44.0	50.0	37.0	45.3
	Mean barometer.		30.063	29.947	30.055	29.978	30.004	29.983	29.809	29.977
	Mean humidity.		.....	47.5	72.2	59.0	53.0	60.0	66.0	59.4
	Rainfall.		2.60	3.51	9.76	2.85	2.16	2.66	2.55	3.72
May.	Thermometer.	Mean	61.5	59.6	59.9	61.4	60.9	60.7	61.0	60.7
		Range.	43.0	45.0	51.0	49.0	47.0	49.0	41.0	46.1
	Mean barometer.		29.975	30.009	29.982	29.993	30.064	29.997	29.939	29.994
	Mean humidity.		.....	60.3	57.7	54.0	62.0	54.0	62.0	58.2
	Rainfall.		2.15	5.83	2.75	1.36	4.45	1.10	3.29	2.99
June.	Thermometer.	Mean.	72.7	70.6	73.0	70.5	74.2	71.7	67.9	71.5
		Range.	36.0	43.0	46.0	44.0	41.0	39.0	41.0	41.4
	Mean barometer.		29.976	29.996	29.990	30.034	29.999	29.997	29.942	29.991
	Mean humidity.		.....	63.0	64.1	65.0	65.0	67.0	68.0	65.3
	Rainfall.		4.29	0.90	3.02	4.13	2.29	5.22	3.66	3.07
July.	Thermometer.	Mean.	78.6	76.4	74.7	74.6	78.6	77.8	77.3	76.9
		Range	28.0	33.0	31.0	31.0	40.0	34.0	33.0	33.0
	Mean barometer.		29.970	30.023	30.030	29.996	29.993	29.953	29.968	29.990
	Mean humidity.		.....	62.7	64.1	66.0	63.0	70.0	67.0	65.4
	Rainfall.		9.20	5.00	2.25	3.63	5.71	5.53	4.35	5.09

TABLE B—*continued.*

Month.	Meteorological elements.		1872.	1873.	1874.	1875.	1876	1877.	1878.	Mean of 7 years.
August.	Thermometer.	Mean.	75.9	72.3	71.1	72.4	74.3	75.5	73.4	73.6
		Range.	34.0	33.0	40.0	27.0	35.0	30.0	31.0	32.9
	Mean barometer.		30.045	30.065	30.030	30.035	30.061	29.954	29.935	30.018
	Mean humidity.		.....	75.4	61.3	76.0	69.0	69.0	70.0	70.1
	Rainfall.		7.81	11.49	5.65	6.42	0.98	0.66	3.83	5.26
September.	Thermometer.	Mean.	67.5	66.1	68.0	64.1	63.8	66.8	67.9	66.3
		Range.	40.0	43.0	36.0	45.0	42.0	36.0	44.0	40.6
	Mean barometer		30.049	30.096	30.100	30.035	29.984	30.077	30.153	30.071
	Mean humidity.		.....	70.6	71.6	65.0	71.0	70.0	72.0	69.9
	Rainfall.		3.66	3.58	6.01	2.53	8.77	2.74	0.96	4.04
October.	Thermometer.	Mean.	52.9	54.7	55.5	53.7	50.8	57.4	58.1	55.4
		Range.	38.0	43.5	42.0	39.0	44.0	38.0	42.0	40.9
	Mean barometer.		30.105	30.073	30.115	30.015	30.020	30.062	30.053	30.063
	Mean humidity.		.....	63.4	65.0	65.0	65.0	74.0	62.0	65.9
	Rainfall.		5.20	5.20	2.87	1.42	1.06	6.52	2.04	3.47
November.	Thermometer.	Mean.	41.2	38.3	41.8	39.7	45.0	46.6	44.8	42.5
		Range.	42.0	35.0	45.0	54.0	54.0	46.0	34.0	44.4
	Mean barometer.		30.099	29.992	30 200	30.107	29.969	30.127	29.991	30.069
	Mean humidity.		.....	63.9	61.0	68.0	71.0	72.0	66.0	67.0
	Rainfall.		3.40	5.10	2.32	5.40	7.31	5.14	2.19	4.41
December.	Thermometer.	Mean	28.9	38.3	35.7	34.7	25.5	40.6	34.5	33.9
		Range.	46.0	50.5	46.0	61.0	45.0	41.0	49.0	48.3
	Mean barometer.		30.160	30.165	30.176	30.042	30.027	30.179	30.018	30.109
	Mean humidity.		.....	69.9	67.0	76.0	73.0	73.0	70.0	71.5
	Rainfall.		2.74	1.38	2.48	3.37	1.40	0.83	3.19	2.19
The whole year.	Mean thermometer.		51.8	51.4	52.6	50.3	52.6	54.2	54.7	52.5
	Mean barometer.		30.047	30.041	30.089	30.059	30.037	30.048	29.987	30.044
	Mean humidity.		.....	.....	65.0	67.0	66.0	68.1	68.2	66.7
	Rainfall.		46.79	54.62	46.31	40.24	47.39	37.26	34.53	43.87
	No. of days on which rain fell.		.....	160	136	154	131	113	118	136
	Prevailing winds.		N. W.	S. W.	S. W.	S. W.	W.	W.	S. W.	S. W.

variations: this month had a range of 44° F. against its average of 40.6° F., and October one of 42° F. against 40.9° F.

The first autumnal frost was observed October 7.

Pressure.—In 1878 the mean reading of the barometer was 29.987 inches, but .057 inch variation from the annual average for seven years, 30.044 inches. All the months but January and December had lower means than usual, the greatest loss being shown in April, the mean reading for which was only 29.809 inches, a reduction from the average of .168 inch.

The barometric range during the year was from 30.727 inches, the highest pressure noted in January, to 29.167 inches, the lowest, in March, a difference of 1.560 inch. The greatest monthly ranges were in December (1.737 inch), November (1.583 inch), March (1.363 inch), and January (1.295 inch); and the least in August (0.563 inch), July (0.627 inch), May (0.674 inch), June (0.754 inch), and September (0.784 inch).

Rainfall.—The amount of rain and melted snow recorded for the year was only 34.53 inches, less by 2.73 inches than the precipitation of the previous year, and as much as 9.34 inches below the average for seven years. The number of days on which the snow or rain fell was also deficient, counting but 118, while the average is as high as 136 days.

Every month except January, May, June, and December had a diminished rainfall, and in none of the latter except December was there an excess over the average as much as one inch. The greatest deficiency in rain, however, was in the fall months, especially in September: in this month the rainfall

measured but .96 inch, while its average for seven years is 3.08 inches; in October, instead of the mean of 3.47 inches, there were 2.04 inches of rain, and in November only 2.19 inches instead of 4.41 inches.

Humidity.—As in the previous year, notwithstanding a lessened rainfall, the mean humidity of 1878 was slightly above the average, being 68.2° (saturation = 100°), against the mean for five years, 66.7°. All the months except March, August, and the last three of the year, had each a higher mean humidity than usual, but those exceeding most their averages were April with a mean humidity of 66° against the average of 59.4°, February 72° against 67.4°, January, which was the dampest month of the year, 77° against 72.6°, and May 62° against 58.2°. The last month, however, and October, with an equal mean humidity, were the driest of the year.

Winds.—The prevailing direction of the wind during the year was southwest. However, in February, April, and May, the wind blew chiefly from the northwest; during November and December it came principally from due west, and in June and September for the most part from the northeast. There were a number of dangerous wind storms during January, and on October 23, a very severe storm occurred resulting in great damage to property.

Electricity.—Lightning was observed on the 7th, 12th, 13th, and 14th of March; on the 19th, 20th, 26th, and 28th of April; on the 4th, 8th, and 21st of May; in June, only on the 17th and 22d. In the month of August there were severe thunder storms and fatal strokes of lightning.

Only one *aurora* was recorded during the year, seen in January.

Epidemics.

It will be remembered that the death-rate of Philadelphia for the year 1877 was the lowest on record during the eighteen years of accurate registration in the city. But the mortality of last year was still less than that of 1877, for (without taking notice of the offspring which died after premature birth or was stillborn) there were only 15,743 deaths in Philadelphia during 1878, or 261 less than in the previous year. Estimating the population at the middle of the year 1878 to have been 876,118, the annual death-rate is expressed by a ratio of 18.00 to a thousand inhabitants living. This ratio is 3.5 deaths per one thousand inhabitants less than the mean ratio for the previous ten years, 21.5, and is very low for so large and closely built a city as Philadelphia.[1] Witness in comparison the death-rates of the following cities, American and foreign, for the last year: New York 24.8, Brooklyn 20.1, Boston 21.03, Montreal 30.9, London 23.5, Paris 24.6, Berlin 29.9, and Vienna 29.6.[2]

The deaths of males numbered 7959, and those of females less, as usual in Philadelphia, counting 7784. Of the whole mortality, 3534 deaths, or 22.45 per cent., occurred within the first year of life; 1127, or 7.16 per cent., between one and two years of age; 1324, or 8.41 per cent., between two and five years; 646, or

[1] Two-thirds of the inhabitants dwell in a density of population of 60,000 to the square mile (Table D).

[2] Registrar General's Annual Summary, Births, Deaths, etc., in London for 1878, p. xv.

4.10 per cent., between five and ten years; 253, or 1.61 per cent., between ten and fifteen years; 501, or 3.18 per cent., between fifteen and twenty years; 1495, or 9.50 per cent., between twenty and thirty years; 1522, or 9.67 per cent., between thirty and forty years; 1268, or 8.05 per cent., between forty and fifty years; 1161, or 7.37 per cent., between fifty and sixty years; 1180, or 7.50 per cent., between sixty and seventy years; and 1732, or 11 per cent., beyond seventy years.

A large proportion of deaths is seen to have fallen, as is always the case, to the very young, but the number bears a ratio to the total mortality which is lower than common, since, while the average death-rate of children under five years of age for the previous eighteen years has been 41.34 per cent.[1] of the total mortality, it was in 1878 but 38.02 per cent. of the same. This reduction was, however, what was to be expected as soon as it was learned that the year was exceptionally healthy, for it is among the young, with their immature or defective organs, that we are accustomed to look for the greatest variation in the death-rate.

The classified list of the causes of death (Table C) shows that in 1878 there were 3303 deaths, or 20.98 per cent. of the total mortality, due to *zymotic diseases;* 3990, or 25.34 per cent., to *constitutional diseases;* 6262, or 39.78 per cent., to *local diseases;* 1658, or 10.53 per cent., to *developmental diseases;* and 516, or 3.28 per cent., to *violent deaths;* while only 14, or .09 of one per cent., were unaccredited to a specific cause. The percentages of the classes in the previous year, written

[1] Records of Board of Health of Philadelphia.

TABLE C.—COMPARISON OF CLASSIFIED LISTS OF CAUSES OF DEATH IN PHILADELPHIA DURING 1872, 1873, 1874, 1875, 1876, 1877, AND 1878.

Class.	Order.	Causes of death.	1872.	1873.	1874.	1875.	1876.	1877.	1878.
		All causes	18987	15224	15011	17805	18892	16004	15743
		Specified causes	18846	15087	14962	17752	18823	15982	15729
I.		Zymotic diseases	6299	3134	3005	4590	4777	3689	3303
II.		Constitutional diseases	3848	3616	3680	3880	4205	3924	3990
III.		Local diseases	6187	5859	6009	6893	7298	6115	6262
IV.		Developmental diseases	1935	1898	1662	1741	1943	1702	1658
V.		Violent deaths	577	580	606	648	600	552	516
		Causes not specified	141	137	49	53	69	22	14
			18987	15224	15011	17805	18892	16004	15743
I.	1	Miasmatic diseases	6175	3033	2903	4472	4638	3595	3210
	2	Enthetic diseases	24	33	40	24	34	43	34
	3	Dietic diseases	90	57	52	78	87	51	44
	4	Parasitic diseases	10	11	10	16	18	0	15
II.	1	Diathetic diseases	622	533	469	578	518	539	592
	2	Tubercular diseases	3226	3083	3211	3302	3687	3385	3398
III.	1	Dis. of the nervous system	2597	2370	2264	2619	2972	2277	2334
	2	" organs of circulation	776	715	771	835	869	829	847
	3	" respiratory organs	1651	1546	1688	1927	1927	1569	1598
	4	" digestive organs	838	922	907	1023	1056	976	961
	5	" urinary organs	242	237	273	367	370	346	399
	6	" generative organs	35	34	60	57	65	63	62
	7	" organs of locomotion	40	31	20	24	24	38	36
	8	" integumentary syst.	8	4	26	41	15	17	25
IV.	1	Develop. dis. of children	126	124	162	156	154	150	162
	2	" " adults	38	45	41	34	37	40	33
	3	" " old people	648	513	433	492	599	619	660
	4	Diseases of nutrition	1123	1216	1026	1059	1153	893	803
V.	1	Accident and negligence	513	521	528	553	518	476	462
	3	Homicide	17	14	19	27	22	[1]17	14
	4	Suicide	47	45	59	68	60	59	40
		Causes not specified	141	137	49	53	69	22	14
			18987	15224	15011	17805	18892	16004	15743
I.	1	Smallpox	2580	39	16	56	407	155	0
		Measles	140	29	117	12	53	69	12
		Scarlatina	168	309	352	1032	328	379	554
		Diphtheria	141	106	181	656	708	458	464
		Croup	284	188	196	429	386	338	388
		Whooping-cough	155	95	74	125	88	81	109
		Typhoid fever	341	358	468	400	774	542	404
		Typhus fever	35	31	26	21	27	15	9
		Erysipelas	76	89	83	87	84	77	67
		Puerperal fever	22	28	65	80	54	50	47
		Dysentery	75	73	49	78	78	79	51
		Diarrhœa	179	163	141	151	149	123	121
		Cholera infantum	1603	1068	859	992	1173	979	700
		Cholera morbus	111	67	51	47	35	43	33
		Malarial fevers	55	30	51	48	47	40	46
		Rheumatism	31	45	37	53	53	37	49
		Cerebro-spinal meningitis	125	238	80	83	85	56	90
		Other miasmatic diseases	54	77	57	122	109	74	66

[1] Includes four militiamen killed in the State service at Pittsburg.

TABLE C—*continued.*

Class.	Order.	Causes of death.	1872.	1873.	1874.	1875.	1876.	1877.	1878.
	2	Enthetic diseases . . .	24	33	40	24	34	43	34
	3	Dietic diseases . . .	90	57	52	78	87	51	44
	4	Parasitic diseases . . .	10	11	10	16	18	0	15
II.	1	Cancer	334	261	306	319	302	327	380
		Other diathetic diseases .	280	272	163	259	216	212	212
	2	Tabes mesenterica . .	779	679	721	766	811	786	738
		Phthisis pulmonalis . .	2248	2228	2277	2359	2676	2411	2491
		Other tubercular diseases .	199	176	213	177	200	188	169
III.	1	Cephalitis	956	874	747	935	1023	724	729
		Apoplexy	260	269	232	260	279	199	267
		Paralysis	236	233	249	287	305	309	323
		Convulsions	732	670	675	811	894	703	694
		Sunstroke	135	16	17	20	130	8	28
		Other dis. of nervous system	278	308	344	306	341	334	293
	2	Pericarditis	45	49	87	87	106	87	99
		Aneurism	9	21	18	23	20	27	24
		Heart diseases . . .	644	582	626	670	701	676	695
		Other dis. organs of circulat'n	78	63	40	55	42	39	27
	3	Bronchitis	214	206	256	342	354	307	326
		Pleurisy	50	65	82	104	73	70	54
		Pneumonia	1252	1132	1133	1277	1306	1063	1020
		Other dis. of respirat'y organs	135	143	217	204	194	129	198
	4	Enteritis	306	337	336	399	431	356	361
		Peritonitis	131	181	119	159	130	143	158
		Intestine diseases . . .	133	111	120	150	133	133	129
		Stomach diseases . . .	6	23	37	29	32	27	21
		Liver diseases . . .	227	257	227	219	271	247	224
		Other dis. of digestive organs	35	13	68	67	59	70	68
	5	Nephritis	17	19	24	47	35	30	29
		Bright's disease . . .	36	29	131	195	263	204	224
		Other dis. of urinary organs .	189	189	118	125	72	112	146
	6	Diseases of ovaries . .	6	8	16	13	8	14	22
		Uterus diseases . . .	29	26	44	44	57	49	40
	7	Caries and necrosis . .	31	22	10	12	13	25	25
		Joint diseases . . .	9	8	10	12	11	13	11
	8	Dis. of integumentary system	8	4	26	41	15	17	25
IV.	1	Malformations . . .	88	90	123	120	126	120	132
		Teething	38	34	39	36	28	30	30
	2	Childbirth	10	15	16	10	8	12	10
		Puerperal convulsions . .	28	27	23	24	23	28	13
		Other develop. dis. of adults .	0	3	2	0	6	0	10
	3	Old age	648	513	433	492	599	619	660
	4	Debility	[1]822	[1]921	712	695	681	530	448
		Inanition	301	295	314	364	472	363	355
V.	1	Drowning	99	112	129	119	111	127	129
		Otherwise	414	409	399	434	407	349	333
	3	Homicide	17	14	19	27	22	17	14
	4	Suicide	47	45	59	68	60	59	40
		Causes not specified . .	141	137	49	53	69	22	14
			18987	15224	15011	17805	18892	16004	15743

[1] Deaths from "premature birth" are included.

NOTE.—In the table the number of deaths from "premature births" and of the "still-born" have been omitted. They were recorded as follows:—

	1872.	1873.	1874.	1875	1876.	1877.	1878.
Premature births . . .	. . .	. . .	229	280	244	261	202
Still-born . .	825	885	891	824	896	930	908

in the same sequence, were 23.00, 24.50, 38.00, 10.60, and 3.40; so that the chief differences between last year and 1877, in the distribution of deaths, lay in a decrease of the proportion of zymotic diseases and an increase in that of local diseases in the year 1878.

The *zymotic* mortality is lower than that recorded for any year since 1874, and in proportion to the population for 1878 really gives a somewhat lower ratio than do the deaths from zymotic disease to the number of inhabitants in the earlier year. Almost all the deaths in this class belong in the order *miasmatic diseases*, under which heading are counted the number 3210. The special features in the order are the absence of deaths from *smallpox*, a great decline in the mortality from *cholera infantum*, and, as compared with that in the previous two years, from *typhoid fever;* quite an increase over the year 1877 in the number of deaths from *scarlatina*, with some excess in those from *croup*, and about the same mortality from *diphtheria* as in the previous year.

No death from *smallpox* has been recorded in Philadelphia since August, 1877—an immunity from this loathsome disease which has not been equalled in half a century. In 1868, however, but a single death occurred, and it is worth remembering that three years afterwards the epidemic of 1871–1872 was upon us, which cost the city in those two years as many as 4464 lives. I recall the event because so dreadful an experience justifies a repetition of the warning I ventured to give in my report for 1877, when the exemption from the disease was not yet so prolonged, that no false sense of security was to be indulged, but

constant vigilance to be exercised, using the prophylactic of vaccination.

The number of deaths from *scarlatina*, augmented as was threatened in the previous year, equalled 554, a figure which exceeds the mortality from the disease in 1877 nearly one-third. In the latter year scarlatina had already increased over its prevalence in 1876, a year marked by a decline from an extended scarlatinal epidemic in 1875. The increase in 1877 was counted from a large number of deaths in the latter half of the year, which establishes, therefore, for the epidemic of 1878, its beginning in that year. The career of the zymotic, as I have just briefly sketched it, declining in one year to increase its death-rate in the next, and to reach its climax perhaps in a third, is an epitome of its behavior for many years; scarlatina never leaves us for any protracted period, but with such intermittent blows strikes at its unfortunate victims.

The mortality from the disease in the first quarter of 1878 (Table D) was 164 deaths, in the second 151, in the third 94, and in the fourth quarter 145; hence, on the whole, scarlatina was on the decline at the end of the year, notwithstanding the large increase of deaths in the last quarter. When the fact is recalled that in the previous exacerbation in the prevalence of the zymotic, in 1875, more than one thousand children lost their lives, it appears that the epidemic of 1878 was a lesser visitation of the scourge.

Scarlatina prevailed quite generally over the city, finding some to strike everywhere, but the southern part of the city—especially the 26th and 30th wards, comprising the southwestern outskirts, in which the death-rate from the disease about doubled that for the

TABLE D.—DISTRIBUTION OF THE DEATHS FROM THE ZYMOTIC DISEASES CHOLERA INFANTUM, SCARLATINA, DIPHTHERIA, CROUP, AND TYPHOID FEVER, AMONG THE SEVERAL WARDS OF PHILADELPHIA IN 1878, DURING EACH MONTH AND FOR THE YEAR.

Number of ward.	January.				February.				March.				April.				May.				June.				July.				August.			
	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.
1st	..	6	2	2	..	..	4	2	4	1	1	3	1	6	3	..	3	..	3	2	1	3	..	2	2	7	2	..	..	1	26	1	2	1	2	8	1	..	..	..
2d	..	6	4	1	1	..	1	..	..	..	..	2	..	1	..	..	1	2	2	1	2	1	..	..	..	5	..	1	..	1	13	..	..	..	4	3	2	..	1	3
3d	..	2	1	2	..	..	2	1	1	..	..	2	1	6	..	..	2	..	..	..	..	3	..	1	..	4	..	..	..	..	8	1	..	..	1	3	..	..	..	3
4th	..	..	2	1	..	..	2	1	1	..	..	2	1	..	..	..	2	..	..	1	..	2	..	1	..	3	1	..	1	1	8	1	..	1	..	7	2	..	2	3
5th	..	1	2	1	..	..	..	2	..	..	..	..	..	..	1	1	..	..	..	..	1	4	1	..	1	2	..	..	1	..	10	1	2	..	1	5	..	..	..	..
6th	..	2	1	1	..	..	..	..	..	1	..	..	3	1	1	..	..	..	..	2	..	..	2	1	1	1	..	..	..	..	1	..	..	..	..	1	..	..	1	1
7th	..	1	2	..	2	..	5	5	1	2	..	3	5	1	..	1	..	1	..	1	..	2	1	1	..	1	..	..	1	..	5	2	1	..	2	6	..	2	..	4
8th	..	6	1	1	..	..	1	..	1	1	..	2	..	..	1	..	2	2	..	1	..	..	..	..	..	..	..	1	..	2	7	..	..	..	..	5	1	..	1	..
9th	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	1	1	..	..	2	..	1	2	2	..	..	..	3	..	..	..	..	3	..	..	..	..
10th	1	2	3	..	2	..	3	..	..	1	..	2	..	..	..	..	..	..	1	1	..	1	1	..	..	..	..	1	..	..	4	..	..	..	..	4	1	..	..	1
11th	..	1	..	2	..	..	..	..	..	2	..	..	1	2	..	..	..	..	..	..	..	1	..	1	..	1	..	1	1	..	10	..	2	..	2	4	1	..	..	2
12th	..	..	..	4	..	..	2	..	..	..	..	3	2	4	..	..	1	..	..	..	..	1	3	..	..	1	1	..	..	1	5	..	1	..	1	5	..	..	..	..
13th	..	..	3	2	..	..	3	2	2	2	..	1	2	1	..	..	3	..	1	2	..	3	1	..	..	2	..	..	..	..	4	1	..	..	..	3	..	..	1	1
14th	..	..	2	1	3	..	1	..	..	1	..	2	1	..	..	..	4	1	2	1	..	5	2	1	1	1	2	..	..	1	6	1	..	1	..	5	..	1	..	1
15th	..	4	3	5	3	..	1	2	1	2	..	..	1	..	1	1	1	3	..	4	3	3	2	2	..	4	2	1	2	..	19	4	2	..	1	11	1	1	..	4
16th	..	1	..	1	1	..	..	..	4	..	..	..	1	2	..	..	..	1	1	1	..	..	1	2	1	4	..	1	..	..	8	1	..	..	1	6	2	1	..	..
17th	..	1	1	2	..	..	..	1	..	..	..	..	..	1	1	..	1	..	1	3	..	5	..	1	3	2	1	..	1	..	7	1	1	1	1	5	..	..	2	3
18th	..	..	6	9	2	..	..	1	3	3	..	1	1	2	2	..	1	1	..	6	2	..	..	..	..	1	..	..	..	..	7	..	1	..	1	5	..	2	..	1
19th	..	..	5	3	3	..	1	5	3	2	..	1	..	3	..	2	2	..	2	2	..	..	..	1	3	2	..	..	1	3	15	1	1	..	1	14	3	3	..	4
20th	..	2	1	1	2	..	1	3	..	2	1	..	4	1	3	..	1	3	..	..	1	3	1	..	3	2	3	1	1	5	18	3	1	..	1	8	..	..	..	4
21st	..	3	2	..	1	..	3	..	1	1	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	1	3	..	..	..	8	..	..	1	..	9	..	..	1	1
22d	..	3	1	1	..	..	..	..	1	1	..	2	1	1	3	..	1	..	..	..	..	..	1	..	..	..	..	4	..	..	8	1	2	..	1	3	..	2	..	1
23d	..	..	1	1	1	..	..	1	1	1	..	..	..	..	1	..	..	2	..	..	..	2	..	..	1	..	..	..	1	..	12	..	..	..	1	9	..	1	..	2
24th	..	4	2	2	2	..	6	1	2	1	..	2	2	4	3	..	4	3	..	2	..	4	5	2	2	2	4	1	1	2	25	2	2	..	1	17	..	2	..	1
25th	..	3	2	5	5	..	1	2	..	1	..	1	1	1	4	..	2	..	1	..	..	..	..	..	1	3	1	1	..	1	17	..	3	..	..	13	2	2	..	4
26th	..	5	1	1	2	..	6	..	1	4	..	5	1	1	2	..	1	..	3	2	1	5	2	..	2	10	1	3	3	1	10	3	2	1	..	11	3	..	..	5
27th	..	..	5	1	1	..	..	..	2	..	..	5	3	1	..	..	2	1	2	..	..	1	1	1	1	..	..	2	..	1	12	5	1	1	..	6	..	..	1	1
28th	..	3	3	2	1	..	3	2	2	1	..	7	2	1	..	..	5	1	..	..	1	5	2	2	..	4	..	2	2	1	13	1	1	..	..	5	..	..	1	2
29th	..	..	2	5	1	..	1	3	1	..	..	2	..	1	..	1	7	3	2	..	..	1	4	2	1	7	7	..	1	1	16	4	2	..	..	11	2	..	..	2
30th	..	2	2	..	..	..	3	1	1	..	..	4	1	..	..	..	..	3	..	..	..	5	1	..	2	..	6	..	1	2	12	2	1	..	..	8	3	1	..	1
31st	..	1	2	5	1	..	..	2	3	1	..	2	1	4	1	1	..	..	..	2	..	2	..	1	3	1	5	1	1	2	10	1	2	..	1	7	1	..	..	3
Total	1	59	62	62	34	..	50	37	36	32	2	55	36	45	28	7	48	27	22	35	12	62	33	22	29	73	41	21	19	26	327	37	30	7	23	210	25	18	11	58

TABLE D—*continued.*

Number of ward.	September.					October.					November.					December.					For the year.					Population, Municipal census of 1876.	Area in square miles.
	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.		
1st	4	2	8	5	6	..	4	3	5	1	..	1	3	4	2	..	1	6	1	..	47	31	27	33	20	38,794	5.509
2d	1	1	1	1	2	..	5	2	1	2	..	7	1	3	..	..	2	1	1	1	24	28	12	11	15	28,242	.442
3d	1	..	1	..	..	..	3	1	..	1	..	1	1	..	..	..	1	2	1	1	16	17	8	11	6	20,255	.191
4th	..	..	..	..	1	2	..	4	..	1	..	1	1	1	1	..	..	..	1	..	20	13	9	9	8	20,545	.229
5th	1	..	..	..	..	1	..	..	..	1	..	1	..	..	..	..	1	..	..	1	21	8	7	2	5	18,972	.321
6th	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	3	1	..	3	2	10	5	6	12,070	.321
7th	3	3	1	..	2	1	..	1	..	4	..	1	1	4	3	..	1	..	3	..	17	18	20	11	20	33,067	.439
8th	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	12	12	5	4	6	23,868	.435
9th	1	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	9	3	2	5	3	15,915	.400
10th	..	..	..	..	..	..	..	1	..	..	1	1	1	1	1	..	1	..	2	..	10	11	7	4	6	24,786	.359
11th	2	..	1	..	1	..	..	2	..	1	..	..	..	..	..	..	..	1	..	..	17	3	8	6	8	14,345	.210
12th	..	..	1	..	..	..	..	..	1	..	..	..	2	..	1	..	1	1	..	1	11	9	10	9	4	15,394	.193
13th	4	..	..	1	..	..	..	..	..	..	..	..	..	..	3	..	1	..	1	..	13	12	8	9	8	20,027	.259
14th	..	..	1	..	1	..	..	..	2	..	..	..	..	..	..	..	..	1	..	1	12	15	9	7	10	23,385	.237
15th	4	1	2	..	2	1	2	..	4	2	..	1	1	1	..	..	2	3	3	2	43	22	21	18	21	48,472	1.049
16th	..	..	1	1	1	..	2	..	..	..	..	..	..	..	..	..	..	1	..	1	18	6	7	11	6	18,903	.281
17th	1	..	..	..	1	1	1	..	..	..	..	1	1	3	..	..	1	2	1	3	16	12	6	13	15	21,279	.251
18th	..	1	..	1	1	1	4	4	1	2	..	..	2	1	..	..	4	..	1	2	16	11	18	18	20	28,286	.650
19th	1	4	2	1	2	..	5	5	2	..	..	3	2	5	..	1	2	5	5	5	35	22	28	26	25	40,604	.742
20th	3	2	..	1	2	3	2	2	2	..	2	3	1	2	3	..	4	4	1	8	38	24	21	9	33	41,854	.734
21st	2	..	..	1	1	1	3	..	2	1	..	..	..	..	..	..	..	..	1	..	21	14	2	7	6	18,097	7.129
22d	2	..	6	1	1	..	1	7	2	..	..	1	6	4	..	..	1	4	2	..	13	10	34	12	7	28,482	18.114
23d	..	..	1	..	4	..	..	..	5	4	..	..	..	3	1	..	..	1	1	..	21	2	7	12	16	25,299	42.716
24th	2	3	2	1	1	2	8	7	3	7	..	4	4	3	..	..	1	3	2	1	48	42	34	20	23	41,310	9.725
25th	..	1	6	1	1	2	3	3	4	1	..	4	1	1	2	..	1	4	7	..	35	19	25	20	20	28,648	13.660
26th	5	5	2	1	3	..	6	10	6	5	..	7	1	5	2	..	1	2	4	1	37	48	24	26	29	27,905	7.481
27th	2	..	..	..	2	..	2	2	1	..	..	..	1	..	..	..	2	3	1	..	20	17	19	11	6	22,457	11 680
28th	2	..	1	1	..	..	..	1	4	1	..	1	2	2	1	..	4	1	1	..	25	29	18	18	7	24,381	6.343
29th	1	1	3	..	2	..	7	2	2	2	..	1	4	3	3	..	5	5	3	1	36	38	28	20	13	33,974	1.400
30th	1	4	1	..	1	..	5	3	..	2	..	1	..	1	1	..	3	2	1	1	21	38	16	4	10	28,937	.519
31st	4	4	..	..	1	2	..	2	..	3	..	1	..	2	1	..	1	4	1	3	25	18	14	17	22	28,895	.713
Total	47	32	42	18	39	17	63	62	48	41	3	41	37	49	26	1	41	59	49	33	700	554	464	388	404	817,448	129.379

whole city—and the northwestern suburbs suffered the most. West Philadelphia was not far behind these sections; also the 21st ward, containing the detached town of Manayunk. There was, however, but little of the disease in the semi-rural 23d ward (Frankford), only two deaths occurring there in a population of about 25,000 inhabitants. The death-rate in the 18th, 19th, and 31st wards, a group of municipal divisions in the northeastern section of the city, was not greater than the average for the whole city, though this district is wont to rival the southern and southwestern wards in mortality from zymotic disease.

I know no more likely cause for the excess of deaths in the more afflicted parts of the city than the poverty of a certain portion of the inhabitants living there, which leads to crowding of families and inattention to cleanliness. Would that the sick could be taken from these dangerous neighborhoods and isolated till the end of their attack!

Diphtheria caused 464 deaths in 1878, an advance of 6 over the number for the previous year. The first quarter furnished 135 of these, the second 81, the third 90, and the last quarter 158, so that there was a rise in the number of deaths in the latter half of the year, which presages a continuation of the epidemic into 1879, illustrating the tenacity of the disease, or, in other words, the enduring nature of the poison, when it has once obtained a foothold anywhere.

The period of life showing the greatest mortality from the disease was that between two and five years of age, and only 17 deaths were found among persons more than fifteen years old. Adults have then little

to fear from diphtheria in Philadelphia; their insusceptibility to its poison is one of the reasons probably of its slow diffusion, for undoubtedly contagion is one if not the chief cause of its spreading. The latter consideration recommends strongly to us isolation to limit the disease as in the case of scarlatina and some other zymotics.

While diphtheria strewed its dead in every section of the city, it was, as a general rule, in the outskirts where the largest numbers were found, the ratio of deaths to the population there being between 8 and 9 to the 10,000. I mean in the extreme southern wards (1st and 26th), West Philadelphia (24th and 27th wards), the northwestern limits of the built-up city (28th and 29th wards), and the 25th ward, which lies east of the 29th, sweeping across the northern extremities of the streets to the river Delaware. An exception to this statement is to be noted with reference to the 6th ward, which equalled in its death-rate from diphtheria the districts above named; the same ward had a comparatively high death-rate from the disease in the previous year also. Among the semi-rural wards, the 22d (Germantown) was more severely visited by the epidemic than the whole city, and more than the outskirts above mentioned, the rate of mortality here being 12 in every 10,000 inhabitants. The lowest death-rates belonged to the central wards of the city, the 8th, 9th, and 10th; in the district which they form together the deaths from diphtheria were in the proportion of from a little more than 2 to the 10,000 of population. But there is a suburban ward to be classed with these, the 21st (Manayunk), in which there were only two deaths from the zymotic

in a population of 18,097; in this ward the disease was exceptionally severe in 1875 and 1876, and left doubtless comparatively fewer children susceptible to its poison in 1878.

The 388 deaths from *croup* recorded for 1878, exceeded by 59 the mortality from this disease in the previous year. Of the whole number, 143 were registered in the first quarter, 63 in the second, 36 in the third, and 146 in the fourth quarter; the allotment showing the usual effect of the warm weather in reducing the mortality credited to the disease. The deaths were distributed somewhat more evenly throughout the city than was the case with the zymotics already mentioned, but, as with them, there was a tendency to a greater mortality in the southern wards and in those which lie to the northern part of the built-up portion of the city. The least number of deaths was in the richest quarter of the city—that known formerly as the "city proper."

The annual mortality from *typhoid fever* had in 1877 declined from that reported for 1876, and the 404 deaths, credited to the disease in 1878, are a still further reduction; the latter give a ratio of 4.6 deaths from typhoid fever to each 10,000 of the population living, while the average ratio for the previous twelve years is as high as 6.05, or one quarter more.

The deaths from the fever decreased in all the wards from their numbers in 1877, except in the 6th, 11th, 17th, 24th, and 26th, but only in the last ward were they more numerous than in 1876. The mortality was divided among the several months as follows: January 34 deaths, February 32, March 28, April 35, May 29, June 26, July 23, August 58, September 39,

October 41, November 26, and December 33. A curve constructed from these figures will agree generally in its variations with those I have drawn in my former reports for other years, bringing out the characteristics which I have shown belong to the curve of the "periodical distribution of typhoid fever in Philadelphia," to wit, comparatively small departures from the horizontal in the first half of the year, a sharp rise during the summer to the maximum in August, then a decline to a minimum in November, and lastly a rise to a limited extent in December.

The reasons for the lowered typhoid fever death-rate, apart from the favorable influence of cooler summers, it is not easy to define.

An unprecedentedly low mortality for Philadelphia belonged to *cholera infantum* in 1878. The deaths from this cause, numbering 700, are 279 less than those occurring in the previous year when the mortality from the disease was already much reduced from its usual extent. Indeed the deaths from this zymotic in 1878 were much below half its mortality in 1872, and are the fewest in actual numbers since the year 1862, when they counted 641; I say in actual numbers, for even in the last-named year, the population of the city being a third less, the relative mortality was really much greater than in 1878.

The deaths were widely distributed over the city, but, as in the case of the zymotics already mentioned, they were less numerous in the central than in the peripheral wards. The outlying towns gave high death-rates except Germantown, which did not exceed in its rate the central wards.

Undoubtedly the low mortality from cholera infantum is to be attributed chiefly to favorable meteoro-

logical conditions; the cool weather of June shortened the summer, while there was no long succession of days in each of which the mean temperature rose close to 80° F., as has been observed in other seasons. But it is perhaps not claiming too much to say that the diffusion of more accurate ideas in regard to the conditions under which the disease is developed, had a marked influence in insuring its prevention and successful treatment. Among the means to these ends were the excursions on the neighboring rivers and through the beautiful public park enjoyed during the summer by thousands of little ones.

Several refugees from the far-off Mississippi Valley, where the *yellow fever* was making such sad havoc, who had found their way to Philadelphia, were lodged in the Municipal Hospital for contagious diseases. Three of these, two received in August and one in September, suffered from the fever, but all recovered. Those who were not sick were taken into the house simply as a measure of precaution. The clothing and effects of all were disinfected in the hot-air chamber of the hospital, and no new cases were developed within or without its walls.

Each of the remaining classes of disease claimed, as in the previous year, a lessened mortality over their average death-rates for the preceding five years, an event to be traced undoubtedly, as in 1877, to favorable meteorological conditions, such as detailed in the first pages of this report. Among the special diseases, *cancer* is still prominent from its high death-rate, its quota of 380 deaths exceeding by 53 the mortality of the previous year, and being the largest annual number of deaths from this cause to be found in the records at the Health Office.

CASE OF GENERAL HYPEROSTOSIS.

By

JAMES H. HUTCHINSON, M.D.,

ONE OF THE ATTENDING PHYSICIANS TO THE PENNSYLVANIA HOSPITAL, ETC.

[Read April 7, 1880.]

I WISH to bring before the College this evening, in order that the Fellows may have the opportunity of personally examining it, a case of disease of the bones which seems to me to possess unusual interest. Before introducing the patient I will read the history of the case, which has been prepared from notes taken at the bedside by my clinical clerk, Dr. Joseph M. Fox:—

J. S., æt. 21, born in Pennsylvania, unmarried, a newspaper carrier, was admitted into the Men's Medical Ward of the Pennsylvania Hospital, March 17, 1880. He is the oldest of a large family of children, all of whom are living except two, who died young of diseases incident to infancy. His father died some years ago, his death having been apparently hastened by an accident from which he never fully recovered. His mother is alive and in good health. There is no history of syphilis or of any other hereditary disease in either parent.. The patient himself does not present any of the usual evidences of congenital or acquired syphilis, his teeth particularly being well formed.

Up to the age of three and a half years, his health seems to have been ordinarily good. At this time, however, he had a series of convulsions, which lasted for about two

weeks, and which came on apparently without exciting cause of any kind. After one of these convulsions, it was observed that he had very little motion in the shoulder-joints and in the left elbow-joint, and a physician who was consulted said that one of his shoulders was dislocated, which one he does not know. Since then there has been, he says, little alteration in the condition of his shoulder-joints, but that the difficulty in moving the elbow has steadily increased until this joint is now rigidly anchylosed. There would seem to have been no further increase in his disease until he had attained his eleventh year, when his left knee suddenly began to swell, and continued swollen for some days. After the subsidence of the swelling, motion in it was found to be very much impaired. Subsequently, however, some of the lost motion was regained.

Six years later, the right side of the patient's face was attacked in the same way, and, although the swelling lasted but a few days, he has ever since been unable to fully open his mouth. Three years ago the disease reappeared in the left knee, and a year later it had also involved the right. Both of these joints have ever since remained stiff, the amount of motion in either joint being exceedingly slight. He has also partial anchylosis of the hips, but is unable to say at what time this occurred, although it exists to a sufficient degree to prevent him from sitting down, and to interfere with progression. He can also give very little information as to the time when numerous exostoses on different parts of his body, which will be more particularly described hereafter, were first noticed, or as to the manner of their occurrence.

On admission, the patient's right arm and forearm are found to be swollen, the swelling being very tense, but unaccompanied by much redness or tenderness. He says that this swelling began about six weeks before coming under observation, and that it closely resembles in character others which have occurred at different times, and which have almost invariably been followed at a longer or shorter inter-

val of time by thickening of the bone, or by an exostosis on the shaft of one of the long bones. He is free from fever, and is sure that, during the previous attacks, fever was never a prominent symptom. He can assign no cause for these attacks; they cannot be traced to exposure, to privation, or to constitutional syphilis. In all other respects his health would appear to have been more than ordinarily good, for he asserts most positively that, with the exception of the occasion already referred to in these notes, when it was thought his shoulder was dislocated, he has never been under the care of a physician, or even been seen by one professionally. His digestive functions are well performed; his lungs and heart are free from disease, the faint systolic murmur which is heard over the heart being unquestionably of hæmic origin. He does not suffer from headache, and presents no symptom indicative of the existence of disease of the nervous system. There has, moreover, never been any return of the convulsive seizures. He is anæmic, but not to a marked degree.

The patient seems to be of fair natural intelligence, but is uneducated. In spite of the condition of the joints of the lower extremities, which prevents him absolutely from sitting down, he is able to earn his livelihood by selling newspapers, and finds no difficulty in keeping up in walking with his friends, or, as he expresses it, he "can walk with almost any one." He is unable, however, to get out of bed without assistance, but says he could do so if the bed were higher. In getting into bed, he throws himself on it with his face downwards, and then gradually rolls over on his back, managing while doing this to bring his legs on to the bed.

The accompanying cyrtometric tracing (Fig. 1), which was kindly taken for me by my friend, Dr. Louis Starr, will give a better idea than any extended description could of the degree and character of the deformity of the thorax. There is very little movement of the chest during respiration, the difference in circumference during a full inspiration and after a full expiration being only three-quarters of an inch.

FIG. 1.

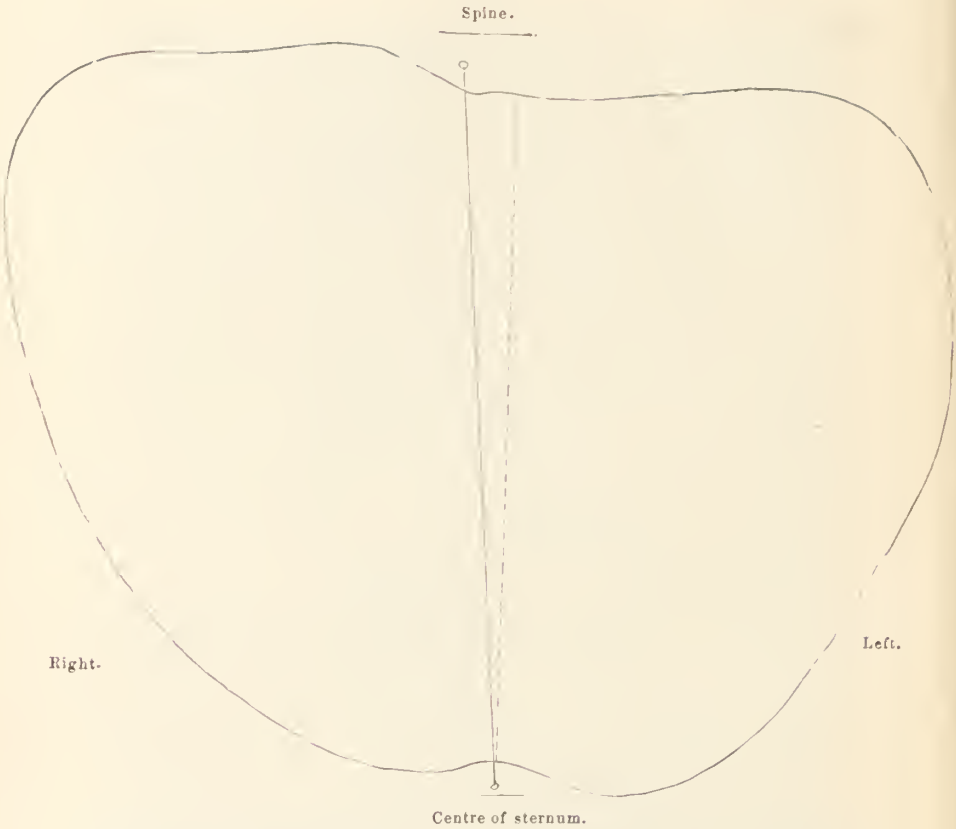


FIG. 1.—Cyrtometric tracing from chest of J. S., March 29, 1880. (Reduced.) Right side, $13\frac{7}{8}$ inches; left side, $13\frac{5}{8}$ inches.

The following notes were kindly furnished by Dr. C. T. Hunter, one of the Surgeons to the Outdoor Department of the Pennsylvania Hospital:—

There is an exostosis about the size of a filbert on the inferior border of the lower jaw, one inch to the left of the median line. The jaws are almost completely anchylosed, and consequently the patient is unable to open his mouth more than half an inch.

A bridge of bone, probably consisting of exostoses fused together, extends from the fourth rib, along the lower margin of the left pectoralis major, upwards towards the axilla. Two well-marked spinous exostoses start from the margin of the left glenoid cavity, and follow the anterior and posterior folds of the axilla outwards all the way to the insertions of the pectoralis major and the latissimus dorsi muscles into the lips of the bicipital groove; these processes are not continuous with the edges of the bicipital groove, for there is slight motion of the arm, although they touch the humerus. The left elbow is rigidly anchylosed in the extended position; the head of the left radius, however, rotates when the forearm is pronated and supinated. This condition of the elbow would seem to indicate that the loss of motion between the ulna and humerus is due rather to the presence of exostoses attached to the epiphyses of these bones, near the margin of the articulating surfaces, than to disease of the joint itself. The forearm, wrist, and hand of the left side are free from exostoses; hence there is no loss of function of these parts.

There is limited motion in the right shoulder. There is a well-marked exostosis connected with the posterior margin of the right bicipital groove, but no other osseous growths can be found on the right humerus; the right elbow is flexed at a right angle. On the anterior face of the right radius there is a large exostosis extending from the tubercle downwards and obliquely outwards, in the line of origin of the flexor digitorum sublimis muscle, to the insertion of the pronator radii teres; the presence of this large exostosis interferes with pronation and supination of the forearm. The right hand cannot be extended beyond the longitudinal axis of the forearm, although there is no interference with the flexion of this member. On the posterior surface of the right chest a line of exostoses begins at the inferior angle of the scapula and extends down to the inferior margin of the thorax; these bony masses are imbricated, and are attached to the ribs just in advance of the angles. The front surface of the chest on the right side is depressed, and there is some

lateral deviation of the spinal column. The condition of the thorax admits of very little movement in respiration; hence breathing is principally abdominal. All parts of the scapulæ, save in the immediate vicinity of the glenoid cavities, are normal.

The transverse processes of the lumbar vertebræ are somewhat enlarged. There is very little motion in any portion of the spinal column. The spine of the right pubis is a little larger than normal; the skeleton of the pelvis in all other parts seems to be unaffected.

A thin plate of bone, an inch and a half long, and an inch and a quarter wide at its base, is imbedded in the proximal extremity of the left gracilis muscle; the broader end of this piece of bone is closely applied but not attached to the descending ramus of the pubis, and the other end terminates in a dense cord that is lost in the gracilis muscle. The branch of the linea aspera that starts at the trochanter major of the left femur is studded with bony prominences; there is also a small exostosis on the inner side of the lower epiphysis of the femur, at the edge of the articular cartilage. Small exostoses are attached to the articular margin of the posterior surface of the head of the left tibia. A large exostosis, terminating in a long spine, arises apparently from the posterior surface of the left tibia, in the line of origin of the inner head of the soleus muscle.

On the inner side of the left foot, where the tendon of the tibialis anticus is inserted, there are two small exostoses; one of these is on the internal cuneiform bone, the other on the proximal end of the first metatarsal bone; the same condition exists in the right foot. There is no impairment of motion in either ankle or foot. On the anterior and outer aspect of the right femur, near the middle, there is a large, oval, bony mass four and a half inches long by two and a half inches wide; another, much smaller in size, is attached to the outer margin of the external condyle, in the line of the tendon of the biceps muscle. In other respects the right femur does not differ from the left, as already described. A

small exostosis is seated on the spine of the right tibia, just below the junction of the upper and middle thirds; there is another small one on the external malleolus. The right lower extremity, in consequence of a twist in the pelvis, is apparently about one inch longer than the left; but careful measurements from the summits of the trochanters show that there is no actual difference in the length of the lower limbs. Motion in the hip and knee of both sides is greatly restricted, hence the patient is unable to sit down, although he walks fairly well.

In the absence of definite indications for treatment, the patient was placed upon ten grains of the iodide of potassium three times a day. He was discharged, March 30, at his own request. Apparently under the influence of the iodide, the swelling of the arm and forearm had decidedly diminished, the outlines of the humerus being distinctly traced, and the radius and ulna easily felt.

I have brought this case before the College because I can find none on record in which there was anything like the same development of bone, although my search has extended through the Transactions of many of the Medical Societies, and a number of medical Journals and Dictionaries of Medicine. Indeed, most of the writers of systematic works on Surgery are silent in regard to the existence of such extensive lesions of the bones as I have exhibited here this evening. Sir James Paget describes[1] a series of cases under the name of "Osteitis deformans," which bear some resemblance to my case; but in that disease there is, with great enlargement,

[1] Medico-Chirurgical Transactions, vol. lx., 1877.

bending of the bones, and it occurs in persons advanced in life, whereas my patient has scarcely passed adolescence.

It has seemed to me proper to regard the case as one of General Hyperostosis, rather than Exostosis, since some of the osseous masses, and notably those in the gracilis and biceps muscles, have no fixed connection with the bones, but are freely movable in the muscles.

NOTE.—When the patient was brought before the College (April 7, 1880), a still further reduction in the amount of swelling of the right elbow had taken place. Indeed, the change was so great as to make me doubt whether I had been right in attributing the improvement which had previously occurred to the treatment, since it had continued after he had left the hospital, and after he had ceased to take the iodide. It may have been, therefore, simply a part of the natural course of the disease.

CASES OF STARVATION FEVER.

By

J. M. DA COSTA, M.D.,

PROFESSOR OF THE PRACTICE OF MEDICINE IN THE JEFFERSON MEDICAL COLLEGE, PHYSICIAN TO THE PENNSYLVANIA HOSPITAL, ETC.

[Read April 7, 1880.]

I DESIRE to lay before the College a remarkable group of cases, which happened in the practice of Dr. Julius Schrotz; and it was with him that I had an opportunity, in two of them, of witnessing the strange phenomena.

CASE I. A little girl, three years of age, for some time pale, weakly, and irritable, was seized on the night of January 1, with vomiting. It became so frequent that Dr. Schrotz was sent for; and he found her very feeble, unable to sit up in bed, and complaining of giddiness. The next day the same symptoms persisted, and the pulse was small and very rapid. Subsequently a marked fever was observed, and the vomiting lessened; indeed, under quinine, beef-tea, brandy, and milk, the gastric symptoms disappeared. The fever was unattended with sore throat, eruption, or diarrhœa, was not of long duration, and by the ninth day from the beginning of the attack, the little patient, in good spirits, with appetite fully returned, was sitting up in bed playing, seemingly quite convalescent. On the evening of the 10th of January, vomiting returned; henceforth nothing was retained on the stomach; the child complained of not being able to see, became weaker and weaker, and expired exhausted on the evening of the 13th.

An *autopsy* was made the next day. In the thorax, yellowish serous effusion was found in both pleural sacs. There was no evidence of lymphy exudation on the pleura; the amount of fluid was sufficient to have compressed the lower lobes of both lungs, which were carnified over a limited extent; the upper lobes were healthy. The heart presented nothing abnormal, except that it was flabby. The stomach was empty, its mucous membrane dryish and very pale; the intestines exhibited no swelling of any of the glands, either in the small or large bowel; the walls were thin; the large intestine contained a small amount of hard dry feces. The spleen was slightly enlarged; the liver had a nutmeg appearance; the kidneys were normal. On opening the skull, the dura mater was found to be somewhat congested, but free from adhesions; the pia mater was opaque; the cortical portions of the brain were œdematous; the convolutions were deep. A section of the upper part of the brain showed punctiform injection; the lateral ventricles were dry; but there was some effusion in the fourth ventricle.

Case II. A brother, four months of age, also a pallid, ill-nourished child, was seized with convulsions on the 10th of January. There was no retraction of the head, the urine was passed, and was not albuminous. He had had a convulsive seizure two months previously, leaving apparently no trace. The convulsions of the 10th of January lasted until nearly evening, and some hours afterwards death took place. In the afternoon a few dark spots, like very small petechiæ, were noticed on the neck, and shortly before death similar spots were detected in the hypogastric region.

The *autopsy* gave results very similar to those in the first case. In all the thoracic and abdominal organs, evidences of profound anæmia; some serous effusion in the pleural sacs; stomach pale, containing a small plug of casein; absence of signs of glandular enlargement in the pale intestines, and a rather fluid blood, were the points specially noticed. Permission to examine the head was not obtained.

Case III. A little girl a year and a half old was now the patient, and this case I watched with Dr. Schrotz. She, too, appeared ill nourished, and was far from a vigorous child. She was on the eighth of January attacked with fever, which was soon found to be associated with an acute bronchitis, and subsequently with a circumscribed broncho-pneumonia. There was no sore throat, no eruption, no albuminous urine. The child was well sustained, and under quinine and stimulating expectorants she slowly recovered in two weeks, having been very ill.

What are we to call these strange cases? What explanation can be given of them? That they were not cases of scarlet fever, or diphtheria, or typhoid fever, was self-evident, though it was equally evident that in some general cause producing profound alteration of nutrition, or in some blood poison, was to be sought the explanation. The convulsions, the eruption, the speedy termination in the second case, suggested cerebro-spinal fever; but spinal symptoms were wanting, and the phenomena in the other cases were not at all those of this disease. The question of poisoning from bad drainage was carefully considered; the drains were all thoroughly examined; they were everywhere in good order, and there was no water-closet or stationary wash-stand near the rooms in which the children played and slept. The supply of water in the house was good, and none of the adults suffered in the least from its free use. Attention was then directed to the food of the children, and here a clue was obtained, which led to an unexpected discovery. The children lived almost entirely on cow's milk; the two youngest, exclusively; the eldest, almost exclusively. They had been always well cared for by their parents, although, perhaps, not made

to pass as much time in the fresh air as would have been good for them; yet, though taking large quantities of nourishment, they did not thrive. While the cases just described were in progress, at all events before the first and the last had terminated, the milk which served as their food was analyzed by Prof. Maisch, and another specimen was procured, as it came directly from the milkman, but without its having passed first through the kitchen. This is the report of the distinguished chemist on milk sent him Jan. 13.

Dr. Schrotz,

Dear Sir: The result of the milk analysis is as follows:—

No. 1. Milk from pot.—10 grammes left 1.498 grm. dry residue, containing 0.436 butter.

No. 2. Milk from nursing bottle.—10 grammes left 0.42 grm. dry residue, containing 0.021 butter.

The percentage of fat in No. 1 is 4.36.
" " " " 2 " 0.21.

It is evident, therefore, that skimmed milk, or partly skimmed milk, was diluted with one and a half parts of water.

This is further proven by the amount of cream separated from both milks on standing.

No. 1 has separated a thick layer of cream.
No. 2 " " a mere film of cream.

Both milks are free from metallic poisons.

Very respectfully,
JOHN M. MAISCH.

Here, then, was the food on which these children had been nourished almost from their birth; here the cause of their lax tissues, their want of resistance. And while they had been growing wanner and paler, a stout maid servant in the kitchen had been growing

fatter and more ruddy. She had been, day in and day out, drinking the milk intended for the children, and diluting the miserable remnant on which they lived. When the doctor's suspicion had been aroused some months before, at casual visits, and he had asked on two occasions to see the milk, she had taken good care to send up to him the milk as it came, fairly good, into the house; and, finally, when the true state of things was detected, confessed to her love of milk and her iniquities.

The cases are now clear enough. In the anomalous fever, the local congestions, the vomiting, the stains on the skin, the convulsions, the ready collapse; in the collection of fluids within the serous sacs, the thinness and pallor of the mucous membranes, we have the phenomena of inanition or starvation, as they have been experimentally demonstrated. To call these cases "Starvation Fever," would, I think, be fully justified. Yet the question remains, whether some cause, in itself of little importance, did not act as an exciting cause to bring about the crash; some cause like a passing influenza, which, throwing the least weight on functions and organs incapable of resistance, broke them down at once. The fact of all the cases happening about the same time, and the catarrhal symptoms in Case III., favor this view.

In concluding this paper, it seems incumbent to dwell on the source of danger to little children it lays bare, and this in a class of society where want does not exist, and where starvation with its fatal consequences would not be looked for. But no words can enforce it better than the histories read before you to-night; the facts themselves speak far more eloquently than I can.

FOOT-BINDING IN NINGPO, CHINA.

SUPPLEMENT TO A PAPER READ DECEMBER 3, 1879.[1]

By

ROBERT P. HARRIS, A.M., M.D.

[Read May 5, 1880.]

In my general paper on this subject, for the Empire as a whole, I stated that it was an error to suppose that the process was commenced in infancy, as had been claimed by travellers, and that I had never heard of its having been done in any part of China at an earlier age than five years. I also gave reasons for its not being commenced in infancy, as stated by the Chinese.

It having been reported, upon reliable authority, that the ladies of Ningpo had the smallest dwarfed feet in the Empire, some of them measuring but three and a half inches from heel to toe, I thought it not impossible that the practice might be commenced exceptionally early in that city, and therefore wrote a letter of inquiry to a lady who has been residing there for several years, and who has every advantage for obtaining the truth. This letter was arranged as a series of questions, twenty-one in number, all of which have been very satisfactorily answered in a reply received April 26, 1880.

[1] Vide supra, page 1.

After my letter was sent to Ningpo, I accidentally met a female missionary who had been several months in a school in Ningpo, but had been obliged to return home on account of failing health. Her statements caused me to append a note to my first paper (page 16), to the effect that the habit of Ningpo mothers was to bind their children's feet in infancy. This statement, like those of many travellers not understanding the Chinese tongue, was not correct. No doubt this lady had seen infants with their feet bound up, but they were not bandaged as in the deforming process.

I will now give the statements of Mrs. Butler, who has been highly commended to me as a perfectly reliable authority :—

Among the wealthy of Ningpo, the binding process commences at six or seven years of age. When a child is large for her age, its feet are first bandaged when five years old. No child has its feet bound at an earlier age than five.

The smallest feet in Ningpo measure, as I had stated, three and a half inches in length. This is taken from the foot with its bandage on, and not from the shoe worn. The feet range from this length to seven inches, the average being about five inches. "There is at Ningpo a mild form of compression which only includes the toes; the direction of the heel is not changed. Some of this class wear the smallest sized shoe; this is accomplished by placing a heel of wood inside the shoe and letting the foot rest upon the heel, the heel of the foot being raised above the top of the shoe and covered by the pantalet. This form is not admired, as it is easy to detect the raised heel."

Dwarfed feet are universal at Ningpo, all women having compressed feet whatever their employment may be. It produces no caste distinction, and does not force upon them a

life of shame, as there are many ways by which a living can be made even with small feet.

They bind their feet simply because it is the custom; it is not the least interwoven with their religion.

"Children are never born with feet like those dwarfed by the Chinese. They do not admire club feet as we see them from natural deformity; they consider that to be born with club feet is a great calamity."

"The Chinese themselves do not consider that binding the feet affects their health or spirits; and as there is no class of women in Ningpo with large feet, so that we could make a comparison, it is difficult to say whether the practice affects the health or not."

The compressed feet suffer from cold; children are often quite lame from its effects. The feet are subject to corns and partial mortification, but are not lost by gangrene.

"If the feet are well cared for, the girl ceases to suffer at the age of thirteen or fourteen years. Occasionally one is known to be a sufferer all her life."

The Chinese do not admire the sight of a bare dwarfed foot, but regard it as disgusting. The girls like to show their feet when dressed, and their dresses are made to expose the shoe. "They do not like any one to see their bare feet, not even the members of their own family. I have never met a Ningpo woman who would be willing to have her unbound foot exposed."

I wrote to Mrs. Butler to know if it would be possible to procure a photograph of a small Ningpo foot, but she answered that it would not. I wanted Dr. Carrow to get me a cast of a leg and foot together, but he failed to obtain one. Many very poor women could not be hired with a high price to allow a cast of a foot to be taken. A bare foot is longer and fuller than one under the bandage.

The wealthy, as a rule, have smaller feet than the

poor; and the men have smaller feet than those of Europeans. It appears then, from reports received from three different parts of China, that there is very little difference in this peculiar custom in Canton, Shanghai, Swatow, and Ningpo; that the Chinese are wedded to it, but why, except that it is an old fashion, they do not know; and that it is not begun anywhere until after the child is old enough to have learned to walk, the age among the better classes being from five to seven years.

REPORT OF A CASE OF DIABETES MELLITUS IN WHICH DOUBLE CATARACT EXISTED:

DEATH OCCURRING THREE DAYS SUBSEQUENT TO AN OPERATION OF EXTRACTION.

By

J. EWING MEARS, M.D.,

SURGEON TO ST. MARY'S HOSPITAL, ETC.

[Read May 5, 1880.]

WHILST on a professional visit to Bedford Springs, Penna., in the month of April, 1879, in consultation with Dr. Griffith, I was asked by Dr. Gump of that place to see with him a young man who was suffering from diabetes mellitus. The following brief history relating to his attack was obtained :—

J. Z. B., single, aged 30 years, had been a clerk in a dry goods store for sixteen years. In November, 1874, he had an attack of pneumonia, from which he recovered well. Whilst suffering from great mental anxiety and worry, caused by a "cross in love," he had what was described as a very "light" convulsion on October 4, 1876. From this time until July 18, 1877, he was in fairly good health, although still suffering from mental distress. At this latter date he had a succession of violent convulsions, lasting for four or five hours, and following this attack he was quite ill for three weeks. The exact nature of these convulsive seizures could not be ascertained, though they were thought to have been epileptiform in character. About the middle of the month of December, following, the patient complained of excessive micturition. On submitting the urine to examination, it was found to

contain a small quantity of sugar, which increased in amount rapidly, so that by January 25, 1878, it was reported to contain a very large quantity, and the daily secretion of urine was three gallons. The treatment which was adopted afforded some relief, but the patient declined to continue it for a longer period than a month.

According to the statement of his attending physician, the patient gradually lost flesh and strength, so that I found him, at the time of my visit, fifteen months later, much emaciated and anæmic. His pulse was feeble but not very rapid—86 to 90 per minute; his tongue was moist, red, and free from coating; skin dry and harsh; bowels in quite good condition. He did not complain of excessive thirst or dryness of the mouth. He appeared much distressed on account of increasing loss of vision, which was found to be due to double cataract—complete lenticular opacity being present in the right eye, with partial and progressive change in the left lens. As he had not been under the immediate care of his physician for some time, the changes in the lenses had not been observed, and no information could be obtained with regard to the time at which the degeneration began, other than the statement of the patient to the effect that he had noted failure of vision during the past few months.

He was very anxious that something should be done to relieve the approaching blindness, which he feared would soon render him helpless. I advised against any operative procedures at that time, owing to his enfeebled condition, stating, however, that, if he improved under treatment and would come to the city, I would consider the propriety of an operation for his relief. I suggested that he should be treated by the administration of ten grains of iodide of potassium three times daily, and that his diet should be restricted to skimmed milk, a pint being given every three hours; if needed, beef-tea and eggs were to be added to his diet, but no starchy food was to be allowed. Under this plan of treatment he improved decidedly and rapidly; the daily secretion of urine decreased from twenty-four pints to six pints, and its

saccharine condition was also notably changed, the quantity of sugar being markedly diminished. This improvement occurred in the interval from the time I had seen him in April, to June 4, when he came to the city, a period of less than two months. Feeling so much improved, he had come to the city for the purpose of having the operation of extraction performed, and was very earnest in his entreaties that it should be done.

After consultation with Dr. Schell, whose report of the operation and the subsequent condition of the patient I append, I decided to perform extraction upon the right eye. Desiring to place the patient in a favorable condition for the operation, I withdrew medication and placed him upon a highly nutritious diet. Whilst this plan of preparation was being carried out, he was, unfortunately, subjected to great mental anxiety by the behavior of his attendant, upon whom he was entirely dependent. Knowing the great importance of having him free from all depressing influences, I stated that I would decline to operate unless I received assurances that all causes of trouble were removed, and that he was entirely free from anxiety. Receiving these assurances, I continued the preparatory treatment, and on June 9 performed extraction upon the right eye, the report of the operation being given by Dr. Schell, as follows:—

"By the request of Dr. Mears I visited Mr. B. in consultation with him on June 7. The patient, though not well nourished, in consequence of an attack of diabetes from which he had suffered for some time, was otherwise in fair condition. His skin was soft and moist, and his pulse 78 per minute, soft and elastic. In both eyes the crystalline lens was found to be cataractous; on the right side the cataract was fully formed, soft, and ripe; on the left side it was not quite mature, there still being a small quantity of transparent cortical matter at the equator of the lens. Vision was limited to light perception in both eyes, with entire absence of retinal reflex; otherwise the eyes appeared to be quite healthy. The

corneæ were clear, the irides mobile, tension normal, and projection of light excellent. As the patient was very anxious to have his sight restored and to return to his home, it was decided to operate, on at least the right eye, at once.

"In pursuance of this conclusion, two days later, *i. e.* on the 9th of June, the patient was anæsthetized by means of sulphuric ether, and succumbed to its influence readily. Dr. Mears performed the operation by making a peripheral incision upwards in the cornea, lacerating the capsule with the point of the knife during its passage through the anterior chamber, and readily expressing the soft lens with the spoon without iridectomy. After the instillation of atropia the eye was bandaged in the usual manner, and healed in two days without inflammatory action. The pupil appeared round, clear, and black under lateral illumination, and the patient expressed himself as delighted with the fact that he was able to see when the bandage was removed in the interval of the dressings. As far as the eye was concerned, the operation may be considered to have been a perfect success."

Noting the condition of the patient after the operation somewhat more in detail, it may be stated that he came out of the state of anæsthesia quietly and calmly; the operation did not produce shock, and no nausea was present. In the evening of the day of the operation, he took nourishment, was free from pain, and during the night slept very well. The day following, June 10, his condition was in every way excellent; he was cheerful and contented to remain quietly in bed. The quantity of urine had not increased, and his desire for liquids was not abnormal. The pulse was increased in frequency, which condition had been noted to exist since the operation. The next day, on removing the bandage, he appeared much pleased at the fact of his being able to see out of the eye upon which the operation had been performed. His condition was regarded as so favorable that arrangements were made to permit him to sit up on the next day. On visiting him, however, in the middle of the afternoon, a very

perceptible change in his condition was noted to have occurred. He was very much depressed in spirits, and manifested great restlessness; his respirations were markedly increased in frequency, being thirty to the minute, and his pulse was quite rapid, 98 to 100 per minute. There was no febrile movement, nor any evidence of inflammatory action present. Learning that some trouble had occurred between his attendant and himself, I attributed the changed condition as largely due to excitement, and spoke to him of the necessity of avoiding it in his present condition, and cautioned the attendant against any action on his part which would provoke it.

Returning at ten o'clock at night, I found his condition worse; respirations 40 per minute, and very shallow; pulse small and rapid, 110–114 per minute; temperature normal; slight delirium present. By an effort he could be made to answer questions. Bromide of potassium in twenty grain doses had been given every two hours since the visit in the afternoon, without producing any effect. Tincture of aconite was ordered in doses of three drops, combined with the bromide of potassium. The remedies failed to afford any relief, and at three o'clock in the morning of the day following, death occurred. Towards the end, the delirium was more marked, the respirations were very rapid, pulse 120–124, and convulsive movements were present, as manifested by twitchings of the upper and lower extremities. Permission was obtained to examine the brain, and the examination was made two hours and a half after death by Dr. Morris Longstreth, whose report I present herewith.

"*Post-mortem Record of Mr. B.*—June 12, 1879. Duration 1¼ hours; 2½ hours after death, *Rigor mortis* slightly developed. Surface of body pale. Face emaciated. Head only examined. The deeper parts of the scalp and the pericranium were much congested. The skullcap was very much thinned in places, and the same condition was found on the parts of the temporal and occipital bone attached to the base of the skull.

"The *dura mater* was very bloody and its vessels unusually prominent; the membrane was tensely spanned over the brain; in places it was very tightly adherent to the bone, both over the convexity and at the base; the adhesion was not general, but was confined to small spots and areas. At these places, as traced by slight tearings of the membrane or by shreds of its tissue left in contact with the bone, the dura was found thickened and rough. The cerebral surface of the membrane at these places presented a mammillated appearance, and around them the membrane was injected. The summits of several of these growths felt harsh and were apparently calcareous, probably due to changes in the bone beneath. The number of places affected in this manner was about twenty. The character of the growth was that of small fibroid nodules.

"The *arachnoid* was entirely opaque and whitish in very many places, especially along the sulci of the cerebrum and also at points opposed to the dura mater growths, as was accurately traced in several instances. Although the dura was removed with care, it is not known that it was adherent to the arachnoid at these places, except at one place where the union of the growth to the arachnoid was found to be very intimate. Along the longitudinal sinus the union of these two membranes was very close, there being a large amount of fibrous and lymphoid structure; it was especially marked at the vertex where the large veins empty into the sinus. Beneath the arachnoid there was a very large amount of clear serum, which in many places caused an upward bulging of the membrane, and also a slight separation of the convolutions. The convolutions, except at these places, were slightly flattened.

"The vessels of the *pia mater* were very full of blood, and over nearly the whole surface of the cerebrum the smaller vessels were found very markedly injected.

"At the *base* of the brain, the *vessels* of the circle of Willis presented nearly normal appearances; at a few places atheromatous changes were visible, especially at the termination of the carotids, and at one or two places on the basilar artery.

The membrane in the interpeduncular space was thickened and opaque. The nerve trunks appeared normal, except the right optic nerve, which was less consistent than its fellow, and was somewhat flattened; no change was found in the commissure or in either optic tract. A considerable amount of serum escaped on division of the infundibulum, and continued to ooze afterwards on handling the brain.

"On opening the *lateral ventricles* there was still present a considerable amount of serum, and the cavity of the ventricles was evidently stretched, especially the posterior horns. The foramen of Monro was widely opened. The choroid plexus was very full of blood, and its surface was slightly granular, as well as that of the ependyma of the lateral ventricles. The septum lucidum was firm. The vessels of the velum interpositum were very full of blood. (Careful search was made later for any cause of obstruction to these vessels, but none was found.) The third and fourth ventricles were also stretched, especially the latter; their interior structures were normal except the middle commissure of the third, which was softer than normal (apparently from stretching).

"The *brain tissue* was apparently normal; there was no abnormal coloration and no softening found at any part. Except near the surface of convolutions, the puncta vasculosa were not unduly prominent (considering that the skull was opened and examined first), but at these parts, in places, the vascularity showed more distinctly than usual.

"The *base of the skull* (interiorly) was very uneven, the furrows and crests, for the accommodation of the convolutions, were very marked, and several of the crests, especially in the middle fossæ but also at other parts, were elevated more than a half inch. The condition was more than an exaggeration of a normal condition, for several of these *cristæ* were thickened at their summits and roughened, the surfaces presenting a spongy appearance.

"In the examination of the *tentorium* (while searching for an obstruction in or around its straight sinus), a growth, similar to those occurring at other parts of the dura, was

found on its under surface in close connection with the right fifth (trigeminal) nerve. The nerve was examined, but no change could be distinctly pointed out in its substance; its trunk, however, had been cut in removing the brain directly at the point where the growth occurred on the membrane.

"The *calvaria* showed moderately marked depressions for the Pacchionian bodies, but at four or five places, especially a marked one on the left frontal bone, the internal plate was completely eroded, and the diploe was opened. None of these places were larger than a pea, and their surfaces were rough and spongy. The crests and furrows on this portion of the skull were less marked than on the base. The petrous bones on both sides were not removed for examination, but neither the dura mater covering them nor the bone tissue, examined after the removal of the dura, showed any evidence of inflammatory disease of the parts having its origin in the external or middle ear.

"*Remarks.*—The changes found in the bone tissue within the cranial cavity, as well as the alteration in the membranes and the intracranial circulation, all point to the conclusion that the commencement of the patient's troubles dated back to a period some considerable time previous to his death. Of the character and nature of the changes found there seems to be little that can be said with certainty. The minute growths on the dura mater were clearly of a fibrous character, and therein resembled the fibroid tumors which not unfrequently have their seat on this membrane. The cause of the little growths found in this case is equally obscure as that of the larger masses spoken of.

"On the relationship or connection of the diabetes mellitus and the cataractous change in the crystalline lens, and on the occurrence of either of these pathological phenomena, the autopsy throws no absolute light; nevertheless there are one or two points to which it may be well to call attention, and to broach the question of the relationship of the marked alterations of intra-cranial circulation to diabetes, on the one

hand, and of the growth near the fifth nerve and the disease of the lens, on the other hand. It is well proved that pathological changes within the cavity or in the floor of the fourth ventricle or of the parts immediately beneath, in the medulla oblongata, are followed by or are the cause of a diabetes. While nothing was found in this case indicative of any organic change in the tissues of the medulla oblongata, there was much to show that for some considerable time a condition of the cranial circulation had been maintained which must have produced a distension of the cerebral ventricles, the fourth ventricle along with the others, and that thus the floor of the ventricle must have been pressed up in an abnormal manner. (The construction of the basilar portion of the occipital bone and of the foramen magnum were such as to favor and exaggerate the effects of such a distension of the fourth ventricle in pressing the tissues of the medulla.) This pressure, varying with the condition of the cerebral circulation, would produce a corresponding variation in the symptoms, viz., the diabetes.

"The simultaneous occurrence of diabetes mellitus and a cataractous condition of the crystalline lens, whether related as cause and effect or not, and the untoward results of operative measures—at least so far as the eye itself is concerned—for the removal of the cataract, are well known. Whether the cataract in this case had any connection with previous existing diabetes, as before remarked, the autopsy gives no answer. From the condition of the eye operated on, the answer can be made that this organ did not follow the general rule; it did not suppurate or degenerate as it usually does following cataract operations in diabetic patients.

"In regard to another explanation of the cataractous change in the lens, it may be worth while to call attention to the small growth found on the tentorium, closely related to the right fifth nerve. There are several cases on record of growths on or about this nerve producing cataractous or other ocular changes in the corresponding eye, as well as, of course, in other parts supplied by the same nerve. Whether it is possible that

a very limited lesion of this nerve trunk—so small a change as not to be visible to the unaided eye—can produce limited lesions in a peripheral part, *e. g.*, the lens, of course the autopsy of this case does not dstermine; it is a question that the further study of this nerve and its morbid changes only can answer."

As the interest in the above case relates especially to the condition of cataract and the results following operative procedures, I desire to invite attention more particularly to these points. The history of the case, as well as the pathological conditions revealed post-mortem, clearly establish the cause of the disease to have been located in the nervous system, taking origin in the mental emotion—"perturbation of the brain"—to which the patient was subjected and which continued to act for a long period, changing its form as the disease advanced, but still exercising its influence upon the patient until his death.

The occurrence of cataract in diabetes mellitus and their pathological relations have long been known and studied. Various explanations have been offered to account for the production of the lenticular opacity. That which proposed to account for the change upon the theory of osmosis (B. W. Richardson, *Journal de la Physiologie, etc.* [Brown-Séquard], t. iii.)—"the passage of the fluids of the lens by exosmosis to the unnaturally dense blood without" (the density being due to the presence of the sugar), causing a "precipitation within the lens of calcareous and other matters" and thus opacity, has not received the approval of more recent observers. Later observations have seemed to show that the degenerative change which occurs in the lens is one of the class "known to be

correlated in the way of nutrition or rather of malnutrition with the diabetic state." (*Brit. and For. Medico-Chirurg. Review*, vol. xxx., 1862.)

It would be interesting to determine by an examination of cases in which lenticular opacity has been reported as having been present, whether the causes in these cases were, as in this case, of nervous origin. In a small number of cases which I have examined, this observation was made. Should the examination of a larger number of cases prove this observation correct, the conclusion might be drawn that the cataractous lens occurred only in those cases in which the cause of the disease was due to some morbid condition existing in the nervous system.

With regard to the performance of operations for the relief of cataract in diabetic patients, Dr. Dickinson (*Diseases of the Kidney*) makes the following statement: "Surgery in such cases is attended with unusual danger: first, from consequent suppuration to which diabetic subjects are especially prone; and secondly, from the likelihood that even if the wound heal well, the patient may be dangerously depressed by the successive action of apprehension before the operation and darkness and restraint after it." He alludes to a case, in his own experience, in which the patient died after an operation which, locally, was perfectly successful. He further states, however, that cases are reported in which the operation has been followed by satisfactory results, "though the perils which environ it are such as to justify its performance only in exceptional circumstances."

Profoundly impressed with the dangers which surrounded operative procedures in such circumstances,

I performed the operation in the above case in response to the patient's earnest wish for surgical relief, and with the hope of removing an obstacle to improvement of his general health, by reason of its interference with his exercise in the open air, and the depression of spirits which the condition of almost total blindness produced. With regard to the method of operation in removing the cataractous lens in these cases, the linear is to be selected in preference to the flap operation, as by this method the wound is much smaller and the danger of suppuration is greatly lessened.

REPORT

OF THE

COMMITTEE ON METEOROLOGY AND EPIDEMICS FOR THE YEAR 1879.

By

RICHARD A. CLEEMANN, M.D.,

MEMBER OF THE BOARD OF HEALTH OF PHILADELPHIA.

[Read December 1, 1880.]

METEOROLOGY.

Temperature.—The year 1879 was, taken as a whole, warmer than usual, the mean annual temperature having been 53.6° F. (Table A), nearly one degree above the average (52.7° F.) for eight years (1872–1879); but it was in about the same proportion cooler than the preceding year, for which the mean reading of the thermometer had been 54.7° F. (Table B).

The several months varied curiously in mean temperature from their averages. January and February with the same mean temperature (29.9° F.) were colder by nearly one and a half degrees than usual, while the spring months March (41.3° F.), April (49.1° F.) and May (63.6° F.) were warmer by the increments respectively of 2.7° F., 4° F., and 2.5° F. Again the summer and the month of September were a little cooler than common, for though June (71.7° F.) exceeded in temperature its average by the very insignificant amount of two-tenths of a degree, July

TABLE A.—METEOROLOGICAL ELEMENTS OF THE CLIMATE AT PHILADELPHIA FOR 1879.

Furnished by C. A. Smith, Observer, S. S. C., U. S. A.

Date, 1879.	BAROMETER. Mean of: Local observations.	Telegraphic observations. Corrected for temp., instrumental error, and elevation. A. M.	P. M.	Midnight.	Corrected for temperature and instrumental error only. A. M.	P. M.	Midnight.	Range. Highest.	Lowest.	Difference.	THERMOMETER. Mean of: Local observations.	Telegraphic observations. A. M.	P. M.	Midnight.	Range. Maximum.	Minimum.	Difference.	Mean relative humidity. Local observ. (per ct.)	WIND. Prevailing direction.	Number of Miles. Noon to 6 P. M.	6 P. M. to midnight.	Midnight to 6 A. M.	6 A. M. to noon.	Total.	Maximum velocity during the month.	Amount of rain or melted snow (inches and hundredths).	No. of days on which rain or snow fell.	Number of auroras.
Jan.	30.069	30.095	30.041	30.087	30.041	29.988	30.033	30.526	29.274	1.252	29.9	27.0	32.8	28.6	56	3	59	72.3	N. W.	2618	2397	2088	2113	9216	48	2.73	7	....
Feb.	30.087	30.114	30.058	30.098	30.059	30.004	30.041	30.777	29.545	1.232	29.9	26.0	32.9	29.4	60	8	52	71.3	N. W.	2396	1946	2001	2169	8512	36	1.19	12	....
March	30.108	30.152	30.062	30.105	30.099	30.010	30.052	30.700	29.382	1.318	41.3	36.8	46.4	39.5	69	19	50	69.6	N. W.	2327	1672	1557	1983	7539	48	2.28	15	....
April	29.935	29.952	29.894	29.947	29.900	29.841	29.896	30.422	29.388	1.034	49.1	44.4	55.1	46.9	80	25	55	63.3	N. W.	2780	1998	1847	2366	8991	50	4.21	13	....
May	30.054	30.117	30.042	30.081	30.066	29.993	30.031	30.508	29.722	0.786	63.6	58.7	10.5	60.7	91	42	49	64.5	S. W.	2181	1709	1281	1794	6965	27	1.22	7	1
June	29.984	30.007	29.943	29.993	29.957	29.894	29.944	30.298	29.480	0.818	71.7	68.5	78.1	68.2	93	49	44	68.5	S. W.	2114	1615	1341	1833	6906	30	6.77	14	....
July	29 986	30.010	29.954	29.981	29.961	29.907	29.935	30.298	29.555	0.743	75.6	72.0	82.2	72.8	96	61	35	65.6	S. W.	2196	1712	1422	1830	7160	30	3.62	9	....
Aug.	29.961	29.983	29.928	29.970	29.934	29.912	29.921	30.183	29.708	0.475	72.7	69.6	78.2	70.3	93	55	38	73.2	S. W.	2061	1614	1361	1832	6868	32	7.13	12	....
Sept.	30.144	30.159	30.112	30.151	30.109	30.062	30.104	30.457	29.752	0.705	64.4	60.6	70.0	62.1	86	43	43	71.1	S.	1867	1433	1331	1725	6356	33	1.12	9	....
Oct.	30.168	30.201	30.129	30.171	30.150	30.079	30.119	30.816	29.556	1.260	61.7	57.6	67.8	58.9	87	32	55	66 9	S. W.	1906	1423	1111	1692	6132	36	0.41	6	....
Nov.	30.165	30.176	30.131	30.175	30.123	30.079	30.122	30.587	29.472	1.115	44.7	41.0	49.4	43.7	75	19	56	68.0	N. W.	2352	1914	1755	2242	8263	40	1.38	11	....
Dec.	30.154	30.201	30.158	30.191	30.148	30.105	30.136	30.651	29.611	1.040	38.8	36.1	42.0	37.9	61	11	50	76.3	S W.	2247	1791	1891	2025	7964	32	4.69	13	....
Ann. means	30.073	30.097	30.038	30.080	30.045	29.990	30.028	30.518	29.537	0.981	53.6	49.8	58.8	51.6	78.9	30.1	48.8	69.2	S. W.	2256	1769	1582	1968	7575	36.8	3.06	11	....

(75.6° F.) fell one degree and a tenth below its mean, and August (72.7° F.) fell below its average nearly one degree. September (64.4° F.) was less warm than usual by one degree and seven-tenths. On the other hand, the heat was greater than common in the last quarter of the year, October (61.7° F.) exceeding its mean temperature to the unparalleled extent of five degrees and five-tenths, November (44.7° F.) its average by nearly two degrees, and December (38.8° F.) its figures as much as four degrees and three-tenths. In October there were eight days in which the maximum of the thermometer was above 80° F., and as many as eleven in which it passed beyond 70° F. It may be said, then, speaking generally, that putting aside the cold months January and February, there was during the rest of the year a tendency to an equalization of temperature, the spring and fall with December being warmer than usual and the summer cooler.

The range of the thermometer during the year was through ninety-nine degrees of temperature, from 3° F. below zero, recorded on January 3, to 96° F., registered July 16. This extent of annual variation is not exceptional, but the months individually were marked by greater differences of temperature than is usual: the average range for January is through 50° F., but this year the range was 59° F.; while in October the difference was 55° F. instead of 43° F., and in November 56° F. instead of 46° F. The first autumnal frost was observed on September 26.

Pressure.—The mean reading of the barometer for 1879 was 30.073 inches, differing by an excess of .025 inch from the average of eight years; while the

TABLE B.—COMPARISON OF METEOROLOGICAL ELEMENTS OF THE CLIMATE AT PHILADELPHIA, FOR THE YEARS 1872, 1873, 1874, 1875, 1876, 1877, 1878, AND 1879, WITH MEANS.

Month	Meteorological elements.		1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	Mean of 8 years.
January.	Ther-m'ter.	Mean.	29.4	28.9	36.7	26.1	37.7	28.4	32.7	29.9	31.2
		Range.	43.0	60.0	55.5	49.5	52.0	41.0	40.0	59.0	50.0
	Mean barometer.		30.053	30.113	30.193	30.231	30.161	30.063	30.075	30.069	30.120
	Mean humidity.		....	....	70.7	71.0	70.0	76.0	77.0	72.3	72.5
	Rainfall.		.95	5.84	4.53	2.83	1.52	2.62	3.94	2.73	3.12
February.	Ther-m'ter.	Mean.	31.2	29.8	33.2	26.1	34 0	36 9	36.6	29.9	32.3
		Range.	45.0	50.0	64.0	58.0	56.0	44.0	46.0	52.0	52.0
	Mean barometer.		30.011	30.016	30.174	30.131	30.131	30.084	29.976	30.087	30.076
	Mean humidity.		....	....	67.7	66.0	69.0	64.0	72.0	71.3	67.9
	Rainfall.		1.12	4.75	2.46	3.20	5.03	0.84	1.64	1.19	2.53
March.	Ther-m'ter.	Mean.	32.1	39.1	40.0	34 9	37.4	38.2	46.4	41.3	38.6
		Range.	52.0	53.0	48.0	49.0	57.0	52.0	53.0	50.0	51.8
	Mean barometer.		30.054	30.001	30.022	30.104	30.040	30.001	29.984	30.108	30.036
	Mean humidity.		....	....	64.0	69.0	68.0	68.0	66.0	69.6	67.1
	Rainfall.		3.67	2.04	2.16	3.10	6.71	3.40	2.89	2.28	3.28
April.	Ther-m'ter.	Mean.	51.6	45.3	42.5	45.5	49.1	50.0	55.9	49.1	48.7
		Range.	54.0	35.0	46.5	51.0	44.0	50.0	37.0	55.0	46.5
	Mean barometer.		30.063	29.947	30.055	29.978	30.004	29.983	29.809	29.935	29.972
	Mean humidity.		....	47.5	72.2	59.0	53.0	60.0	66.0	63.3	59.9
	Rainfall.		2.60	3.51	9.76	2.85	2.16	2.66	2.55	4.21	3.78
May.	Ther-m'ter.	Mean	61.5	59.6	59.9	61.4	60.9	60.7	61.0	63.6	61.1
		Range.	43.0	45.0	51.0	49.0	47.0	49.0	41.0	49.0	46.5
	Mean barometer.		29.975	30.009	29.982	29.993	30.064	29.997	29.939	30.054	30.001
	Mean humidity.		....	60.3	57.7	54.0	62.0	54.0	62.0	64.5	59.0
	Rainfall.		2.15	5.83	2.75	1.36	4.45	1.10	3.29	1.22	2.77
June.	Ther-m'ter.	Mean.	72.7	70.6	73.0	70.5	74.2	71.7	67.9	71.7	71.5
		Range.	36.0	43.0	46.0	44.0	41.0	39.0	41.0	44.0	41.7
	Mean barometer.		29.976	29.996	29.990	30.034	29.999	29.997	29.942	29.984	29.990
	Mean humidity.		....	63.0	64.1	65.0	65.0	67.0	68.0	68.5	65.7
	Rainfall.		4.29	0.90	3.02	4.13	2.29	5.22	3.66	6.77	3.53
July.	Ther-m'ter.	Mean.	78.6	76.4	74.7	74.6	78.6	77.8	77.3	75.6	76.7
		Range.	28.0	33.0	31.0	31.0	40.0	34.0	33.0	35.0	33.2
	Mean barometer.		29.970	30.023	30.030	29.996	29.993	29.953	29.968	29.986	29.989
	Mean humidity.		....	62.7	64.1	66.0	63.0	70.0	67.0	65.6	65.4
	Rainfall.		9.20	5.00	2.25	3.63	5.71	5.53	4.35	3.62	4.91

TABLE B—*continued.*

Month.	Meteorological elements.		1872.	1873.	1874.	1875.	1876	1877.	1878.	1879.	Mean of 8 years.
August.	Ther-m'ter.	Mean.	75.9	72.3	71.1	72.4	74.3	75.5	73.4	72.7	73.5
		Range.	34.0	33.0	40.0	27.0	35.0	30.0	31.0	38.0	33.5
	Mean barometer.		30.045	30.065	30.030	30.035	30.061	29.954	29.935	29.961	30.011
	Mean humidity.		....	75.4	61.3	76.0	69.0	69.0	70.0	73.2	70.5
	Rainfall.		7.81	11.49	5.65	6.42	0.98	0.66	3.83	7.13	5.49
September.	Ther-m'ter.	Mean.	67.5	66.1	68.0	64.1	63.8	66.8	67.9	64.4	66.1
		Range.	40.0	43.0	36.0	45.0	42.0	36.0	44.0	43.0	40.9
	Mean barometer		30.049	30.096	30.100	30.035	29.984	30.077	30.153	30.144	30.080
	Mean humidity.		....	70.6	71.6	65.0	71.0	70.0	72.0	71.1	70.1
	Rainfall.		3.66	3.58	6.01	2.53	8.77	2.74	0.96	1.12	3.68
October.	Ther. m'ter.	Mean.	52.9	54.7	55.5	53.7	54.8	57.4	58.1	61.7	56.2
		Range.	38.0	43.5	42.0	39.0	44.0	38.0	42.0	55.0	42.7
	Mean barometer.		30.105	30.073	30.115	30.015	30.020	30.062	30.053	30.168	30.076
	Mean humidity.		....	63.4	65.0	65.0	65.0	74.0	62.0	66.9	66.0
	Rainfall.		5.20	5.20	2.87	1.42	1.06	6.52	2.04	0.41	3.09
November.	Ther-m'ter.	Mean.	41.2	38.3	41.8	39.7	45.0	46.6	44.8	44.7	42.8
		Range.	42.0	35.0	45.0	54.0	54.0	46.0	34.0	56.0	45.8
	Mean barometer.		30.099	29.992	30.200	30.107	29.969	30.127	29.991	30.165	30.081
	Mean humidity.		....	63.9	61.0	68.0	71.0	72.0	66.0	68.0	67.1
	Rainfall.		3.40	5.10	2.32	5.40	7.31	5.14	2.19	1.38	4.03
December.	Ther-m'ter.	Mean.	28.9	38.3	35.7	34.7	25.5	40.6	34.5	38.8	34.5
		Range.	46.0	50.5	46.0	61.0	45.0	41.0	49.0	50.0	48.5
	Mean barometer.		30.160	30.165	30.176	30.042	30.027	30.179	30.018	30.154	30.115
	Mean humidity.		....	69.9	67.0	76.0	73.0	73.0	70.0	76.3	72.1
	Rainfall.		2.74	1.38	2.48	3.37	1.40	0.83	3.19	4.69	2.50
The whole year.	Mean thermometer.		51.8	51.4	52.6	50.3	52.6	54.2	54.7	53.6	52.7
	Mean barometer.		30.047	30.041	30.089	30.059	30.037	30.048	29.987	30.073	30.048
	Mean humidity.		....	....	65.0	67.0	66.0	68.1	68.2	69.2	67.0
	Rainfall.		46.79	54.62	46.31	40.24	47.39	37.26	34.53	36.75	42.98
	No. of days on which rain fell.		....	160	136	154	131	113	118	128	135
	Prevailing winds.		N.W.	S. W.	S. W.	S. W.	W.	W.	S. W.	S. W.	S. W.

range was 1.542 inches, from 29.274 inches in January to 30.816 inches recorded for October.

April was distinguished by the lowest mean monthly barometric pressure (29.935 inches), and October by the highest (30.168 inches). Between these extremes the other months came in the following order, from lower to higher: August, June, July, May, January, February, March, September, December, November.

Rainfall.—During the year 36.75 inches of rain and snow (melted) fell, the year 1879 having been, like the two preceding years, deficient in precipitation. The rain or snow fell on 128 days, seven less than the average. The most rain was collected in August, as much as 7.13 inches, while for October only 0.41 inch is recorded. These months may serve as types of the seasons to which they respectively belong, for the 17.52 inches of rain which fell through the summer exceeds the average for that period of the year by 3.59 inches, while the 3.01 inches, which were gathered in the autumn, are as much as 6.79 inches below the average for that season. The October drought was accompanied, as we have already seen, by an entirely exceptional high temperature for that month. In the other months the precipitation did not vary in so important a degree from the averages, as the table (B) will show.

Humidity.—The mean humidity of the year is expressed as equal to 69.2° (saturation=100°); this is a little more than two degrees above the average for six years, and, indeed, is higher than the equivalent for any of the previous five years. The increase in humidity was shared, with one insignificant exception, by every one of the months, though in different degrees.

December was conspicuous by having the highest mean monthly humidity (76.3°), and April by recording the lowest (63.3°). The months placed according to their degrees of humidity, from high to low, read as follows: December, August, January, February, September, March, June, November, October, July, May, April.

Winds.—Northwest winds prevailed during the first five months of the year, and in November; but during the other months, with the exception of September in which the wind blew chiefly from the south, the southwest winds predominated.

Electricity.—Lightning was recorded on three days in March, and one day in April, and thunder was heard once in December, phenomena uncommon in the months named. On the night of May 21, the only *aurora* of the year was seen.

Epidemics.

The number of deaths recorded at the Health Office in Philadelphia during the year 1879 (Table C), was fifteen thousand four hundred and seventy-one (15,471). This is exclusive of the "still-born," which numbered in the same period eight hundred and eleven (811), and of deaths following "premature birth," which equalled one hundred and ninety (190).

The population of Philadelphia in June of the present year (1880) was, according to the figures of the United States census, 846,980 inhabitants; in June, 1870, it was, by the same authority 674,022; the increase in the number of inhabitants during the decade was therefore 172,958, or an average increment of

TABLE C.—COMPARISON OF CLASSIFIED LISTS OF CAUSES OF DEATH IN PHILADELPHIA DURING 1872, 1873, 1874, 1875, 1876, 1877, 1878, AND 1879.

Class.	Order.	Causes of death.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
		All causes	18987	15224	15011	17805	18892	16004	15743	15471
		Specified causes	18846	15087	14962	17752	18823	15982	15729	15461
I.		Zymotic diseases	6299	3134	3005	4590	4777	3689	3303	2867
II.		Constitutional diseases	3848	3616	3680	3880	4205	3924	3990	3844
III.		Local diseases	6187	5859	6009	6893	7298	6115	6262	6422
IV.		Developmental diseases	1935	1898	1662	1741	1943	1702	1658	1792
V.		Violent deaths	577	580	606	648	600	552	516	536
		Causes not specified	141	137	49	53	69	22	14	10
			18987	15224	15011	17805	18892	16004	15743	15471
I.	1	Miasmatic diseases	6175	3033	2903	4472	4638	3595	3210	2773
	2	Enthetic diseases	24	33	40	24	34	43	34	37
	3	Dietic diseases	90	57	52	78	87	51	44	42
	4	Parasitic diseases	10	11	10	16	18	0	15	15
II.	1	Diathetic diseases	622	533	469	578	518	539	592	564
	2	Tubercular diseases	3226	3083	3211	3302	3687	3385	3398	3280
III.	1	Dis. of the nervous system	2597	2370	2264	2619	2972	2277	2334	2219
	2	" organs of circulation	776	715	771	835	869	829	847	898
	3	" respiratory organs	1651	1546	1688	1927	1927	1569	1598	1771
	4	" digestive organs	838	922	907	1023	1056	976	961	1003
	5	" urinary organs	242	237	273	367	370	346	399	410
	6	" generative organs	35	34	60	57	65	63	62	60
	7	" organs of locomotion	40	31	20	24	24	38	36	37
	8	" integumentary syst.	8	4	26	41	15	17	25	24
IV.	1	Develop. dis. of children	126	124	162	156	154	150	162	178
	2	" " adults	38	45	41	34	37	40	33	40
	3	" " old people	648	513	433	492	599	619	660	722
	4	Diseases of nutrition	1123	1216	1026	1059	1153	893	803	852
V.	1	Accident and negligence	513	521	528	553	518	476	462	462
	3	Homicide	17	14	19	27	22	[1] 17	14	23
	4	Suicide	47	45	59	68	60	59	40	51
		Causes not specified	141	137	49	53	69	22	14	10
			18987	15224	15011	17805	18892	16004	15743	15471
I.	1	Smallpox	2580	39	16	56	407	155	0	6
		Measles	140	29	117	12	53	69	12	8
		Scarlatina	168	309	352	1032	328	379	554	336
		Diphtheria	141	106	181	656	708	458	464	321
		Croup	284	188	196	429	386	338	388	291
		Whooping-cough	155	95	74	125	88	81	109	103
		Typhoid fever	341	358	468	400	774	542	404	344
		Typhus fever	35	31	26	21	27	15	9	1
		Erysipelas	76	89	83	87	84	77	67	83
		Puerperal fever	22	28	65	80	54	50	47	41
		Dysentery	75	73	49	78	78	79	51	60
		Diarrhœa	179	163	141	151	149	123	121	107
		Cholera infantum	1603	1068	859	992	1173	979	700	804
		Cholera morbus	111	67	51	47	35	43	33	27
		Malarial fevers	55	30	51	48	47	40	46	39
		Rheumatism	31	45	37	53	53	37	49	34
		Cerebro-spinal meningitis	125	238	80	83	85	56	90	62
		Other miasmatic diseases	54	77	57	122	109	74	66	106

[1] Includes four militiamen killed in the State service at Pittsburg.

TABLE C—*continued.*

Class.	Order.	Causes of death.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
	2	Enthetic diseases	24	33	40	24	34	43	34	37
	3	Dietic diseases	90	57	52	78	87	51	44	42
	4	Parasitic diseases	10	11	10	16	18	0	15	15
II.	1	Cancer	334	261	306	319	302	327	380	363
		Other diathetic diseases	280	272	163	259	216	212	212	201
	2	Tabes mesenterica	779	679	721	766	811	786	738	649
		Phthisis pulmonalis	2248	2228	2277	2359	2676	2411	2491	2481
		Other tubercular diseases	199	176	213	177	200	188	169	150
III.	1	Cephalitis	956	874	747	935	1023	724	729	703
		Apoplexy	260	269	232	260	279	199	267	268
		Paralysis	236	233	249	287	305	309	323	317
		Convulsions	732	670	675	811	894	703	694	626
		Sunstroke	135	16	17	20	130	8	28	3
		Other dis. of nervous system	278	308	344	306	341	334	293	302
	2	Pericarditis	45	49	87	87	106	87	99	124
		Aneurism	9	21	18	23	20	27	24	25
		Heart diseases	644	582	626	670	701	676	695	704
		Other dis. organs of circulat'n	78	63	40	55	42	39	27	45
	3	Bronchitis	214	206	256	342	354	307	326	301
		Pleurisy	50	65	82	104	73	70	54	67
		Pneumonia	1252	1132	1133	1277	1306	1063	1020	1208
		Other dis. of respirat'y organs	135	143	217	204	194	129	198	195
	4	Enteritis	306	337	336	399	431	356	361	340
		Peritonitis	131	181	119	159	130	143	158	194
		Intestine diseases	133	111	120	150	133	133	129	122
		Stomach diseases	6	23	37	29	32	27	21	33
		Liver diseases	227	257	227	219	271	247	224	271
		Other dis. of digestive organs	35	13	68	67	59	70	68	43
	5	Nephritis	17	19	24	47	35	30	29	35
		Bright's disease	36	29	131	195	263	204	224	253
		Other dis. of urinary organs	189	189	118	125	72	112	146	122
	6	Diseases of ovaries	6	8	16	13	8	14	22	18
		Uterus diseases	29	26	44	44	57	49	40	42
	7	Caries and necrosis	31	22	10	12	13	25	25	26
		Joint diseases	9	8	10	12	11	13	11	11
	8	Dis. of integumentary system	8	4	26	41	15	17	25	24
IV.	1	Malformations	88	90	123	120	126	120	132	144
		Teething	38	34	39	36	28	30	30	34
	2	Childbirth	10	15	16	10	8	12	10	16
		Puerperal convulsions	28	27	23	24	23	28	13	18
		Other develop. dis. of adults	0	3	2	0	6	0	10	6
	3	Old age	648	513	433	492	599	619	660	722
	4	Debility	[1]822	[1]921	712	695	681	530	448	472
		Inanition	301	295	314	364	472	363	355	380
V.	1	Drowning	99	112	129	119	111	127	129	105
		Otherwise	414	409	399	434	407	349	333	357
	3	Homicide	17	14	19	27	22	17	14	23
	4	Suicide	47	45	59	68	60	59	40	51
		Causes not specified	141	137	49	53	69	22	14	10
			18987	15224	15011	17805	18892	16004	15743	15471

[1] Deaths from "premature birth" are included.

NOTE.—In the table the number of deaths from "premature births" and of the "still-born" have been omitted. They were recorded as follows:—

	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Premature births	...	...	229	280	244	261	202	190
Still-born	825	885	891	824	896	930	908	811

17,295 inhabitants yearly, so that I will not be far wrong if I place the population of Philadelphia in 1879, at 829,685 inhabitants, or less by the average of one year's increase than that in 1880. On this estimate the death-rate last year proves to have been but 18.65 deaths to each thousand inhabitants living, a very low urban death-rate, much below that of any other equally large city, and the least attained in Philadelphia since registration became reliable in this city, a period of twenty years. The healthiest year before, with the exception of the one immediately previous (1878), when the death-rate, as corrected by the new census, was 19.38, I found to be the year 1867, for which the rate was 19.52. These rates are all considerably below the average annual death-rate for the ten years 1869–1878, which was calculated to be 21.87, the figures of the new census being used in estimating also the population of each year since 1870.

A consideration of the meteorology of the year as briefly set forth above would have led to anticipations of an unusually healthy year, in advance of the calculation of the death-rate. The excessive cold in January and February, though unfavorable during those months, would have been expected to exert a certain influence for good in repressing at a more distant period of the year some of the zymotic diseases, as for instance typhoid fever and perhaps cholera infantum, while the cooler summer would certainly have been trusted to lessen the mortality from these affections and from diseases of the nervous and digestive systems. At the same time, the genial spring and warm December would not have escaped notice as antagonistic to some other zymotics, such as diphtheria and croup.

The mortality of 1879 was distributed unequally between the sexes: 7886 of those who died were males, and 7585 females, the latter sex furnishing as usual the lesser number. The deaths were divided among the several ages as follows: there were under one year of age 3503, or 22.64 per cent. of the total mortality; between one and two years 1034, or 6.68 per cent.; between two and five years 985, or 6.37 per cent.; between five and ten years 498, or 3.22 per cent.; between ten and fifteen years 267, or 1.73 per cent.; between fifteen and twenty years 407, or 2.63 per cent.; between twenty and thirty years 1523, or 9.85 per cent.; between thirty and forty years 1536, or 9.93 per cent.; between forty and fifty years 1273, or 8.23 per cent.; between fifty and sixty years 1275, or 8.24 per cent.; between sixty and seventy 1277, or 8.25 per cent.; between seventy and eighty 1147, or 7.41 per cent.; and beyond eighty years 746, or 4.82 per cent.

The infantile mortality is seen to bear a large proportion to the total number of deaths, especially for the first year of life, and as much as 35.69 per cent. of the whole mortality to have fallen upon children less than five years old. Great as this proportion is, my previous reports show that it is less than it is accustomed to be, as might have been looked for in an exceptionally healthy year.

In the distribution of the deaths under their several causes it appears (Table C) that of the total number (15,471) an aggregate of 2867, or 18.53 per cent., falls under the class ZYMOTIC DISEASES; 3884, or 24.85 per cent., are recorded under CONSTITUTIONAL DISEASES; 6422, or 41.51 per cent., under LOCAL DISEASES; 1792,

or 11.58 per cent., under DEVELOPMENTAL DISEASES; and 536, or 3.46 per cent., under VIOLENT DEATHS; while only 10, or .06 per cent., are not classified.

Inspection of Table C will show that the zymotic mortality for 1879 is less than that for any other of the eight years represented there. All the more prominent diseases in this class declined in numbers from their mortality in the previous year, with the exception of cholera infantum, which, however, was less fatal than usual; but an important event was the reappearance, towards the close of the year, of smallpox in the death-list.

The last death from *smallpox* had been recorded in August, 1878; a lapse of nearly two and a half years followed, and then in December, 1879, the registry of a new series was begun. Up to the end of the month and year there were in all six deaths, all but one of which occurred in the outskirts of the built-up portion of the city, in the Twenty-fifth Ward: the exception was in the Sixth Ward, which is situated centrally, miles away from the Twenty-fifth. Intimation of the presence of the disease in the city first came to the Health Office in the report (unpublished records of Health Office) during November, of a case of smallpox in a boy seven years of age, living in the Twenty-fifth Ward. The boy died in a few days, but inquiry developed that several children dwelling in the same house had immediately before suffered from mild attacks of the disease; furthermore, that a boy, resident in the same family, who had not been considered ill, had noticed in the beginning of the month a pustular eruption upon his skin. Being questioned, the boy said he had played in the street with

another, who had a similar eruption, but whence the latter, who presented as far as we can learn the initial case, came, or who he was, is unknown. It seems that the disease increased in strength, as it grew in extent; at first appearing as a trifling skin affection, and finally as a mortal illness.

Eight cases of variolous disease in all were reported to the Health Office during November, all from the Twenty-fifth Ward; in December the number had increased to thirty-five, of which twenty-three were in the same ward, four in the Nineteenth, one in the Twentieth, three in the Thirty-first, one in each of the following wards, Sixth, Twenty-sixth, Twenty-eighth, and Twenty-ninth. Of these wards, the Nineteenth and Thirty-first are immediately adjacent to the Twenty-fifth, as is also the Twenty-eighth, which contains the hospital in which smallpox cases are received; the Twentieth adjoins the Nineteenth, and the Twenty-ninth the Twentieth, so that these municipal divisions, from which almost all the cases were reported, may, in a general way, be said to belong to the same section of the city, the northern part; but the Sixth and Twenty-sixth wards with their one case apiece are each in other and quite distant quarters of the city, one in the central part, as already mentioned, the other in the southern.

The Board of Health at once took energetic means to "stamp out," if possible, the disease. Special scavengers were sent to clean the streets of the invaded district, and inspectors detailed to make domiciliary visits for searching out unreported cases and discovering possible offences against sanitary laws. When such offences were found, and not remedied at once by

the owners of the property in which they existed, a force of men, kept ready for the purpose, immediately abated them. Where cases of smallpox were reported, the medical inspector verified the diagnosis, had the sick removed, if possible, to the hospital, and looked after the sanitary condition of the house and surroundings.

The vaccine physician was directed to thoroughly canvass his district and to vaccinate or revaccinate all the children of the public schools. When a death occurred from the disease, immediate burial without public funeral was ordered. At the same time no secret was made of the condition of affairs, but resolutions of the Board of Health were published in the daily newspapers urging general vaccination and revaccination. Whether successfully resisted by these measures or not, smallpox was gaining ground but slowly at the end of the year.

The 336 deaths from *scarlatina* constitute a mortality less by 218 than that from the same cause in 1878. The mortality in the latter year, it will be remembered, followed upon a large increase in the number of deaths from the disease in the last quarter of 1877, was on the decline in the third quarter of the year, and rose again in extent at the end of the year, but not to a degree to negative the inference that the disease was really decreasing and might be expected to cause fewer deaths in 1879. Accordingly the mortality from scarlatina constantly diminished last year (Table D), from 133 deaths in the first quarter, to 99 in the second, 59 in the third, and 45 in the last quarter of the year. Such a course presages a still lighter death-rate for 1880; but in view of the persistency and ten-

dency to periodical increase which experience has shown to belong to the scarlatinal poison, I shall not be surprised to find a new exacerbation of the disease beginning at the close of that year.

The deaths from scarlatina were scattered over the whole city, though in unequal proportions. They were less numerous in relation to population in the central parts of the city (Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Eleventh, Twelth, Thirteenth, Fourteenth, Fifteenth wards) where the mortality ranged from 1 to 3 deaths to ten thousand inhabitants living; more plenty in the southeastern section (Second and adjacent wards) in which the rate was from 5 to 9, and in the northern district (Nineteenth, Thirty-first wards and their neighbors) where a rate prevailed of from 4 to 8 deaths to each ten thousand inhabitants. In the latter region, the Nineteenth and Thirty-first wards had a greater mortality from scarlatina than during the previous year. The Twenty-first Ward (Manayunk), Twenty-second (Germantown), and Twenty-third (Frankford), all semi-rural wards, were not, as is often the case, more severely visited by the zymotic than some of the central wards, their rate being from 2 to 3 deaths to the ten thousand inhabitants. In that part of the city, across the Schuylkill River, known as West Philadelphia (Twenty-fourth and Twenty-seventh wards), the diminished mortality was in strong contrast to what it had attained in the previous year, for where it had been 9 (Twenty-fourth Ward), it was now 4 deaths to the ten thousand inhabitants, and where 8 (Twenty-seventh Ward), now only 1. Also in the southwestern wards (Twenty-sixth and Thirtieth), where the disease had been

TABLE D.—DISTRIBUTION OF THE DEATHS FROM THE ZYMOTIC DISEASES CHOLERA INFANTUM, SCARLATINA, DIPHTHERIA, CROUP, AND TYPHOID FEVER, AMONG THE SEVERAL WARDS OF PHILADELPHIA IN 1879, DURING EACH MONTH AND FOR THE YEAR.

Number of ward.	January.					February.					March.					April.					May.					June.					July.					August.				
	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.
1st	..	1	3	4	4	..	1	2	3	2	..	..	1	..	..	..	4	3	1	..	..	4	2	1	3	4	4	..	..	2	28	5	2	2	1	17	1	1	..	2
2d	..	6	2	2	1	..	4	..	..	..	..	1	2	..	1	..	..	1	1	3	..	4	1	1	..	..	4	2	1	..	21	..	..	3	1	12	2	..	1	2
3d	..	2	..	3	..	..	..	2	..	1	..	4	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	16	..	..	..	..	6	..	1	..	..
4th	..	..	2	..	..	..	..	1	..	..	..	3	..	..	..	..	1	1	..	1	..	..	..	..	..	1	1	..	1	..	24	..	..	1	..	7	..	..	..	3
5th	..	..	1	2	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	9	..	..	..	1	1	..	..	..	1
6th	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	..	..
7th	..	2	2	3	..	..	..	..	1	2	..	2	1	2	..	..	..	..	..	1	1	1	..	..	..	2	..	..	1	1	28	2	1	..	1	17	..	..	..	..
8th	..	3	..	..	5	..	..	..	1	1	..	1	1	1	1	..	1	..	..	1	..	..	..	..	..	1	..	..	..	2	9	..	..	..	..	8	..	..	..	1
9th	..	..	..	2	1	..	..	..	2	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	4	1	..	..	..	2	..	..	1	..
10th	..	..	..	1	1	..	1	4	..	1	..	2	1	..	..	..	1	1	..	2	..	..	..	1	..	1	..	..	..	..	10	..	1	..	1	5	..	..	..	..
11th	..	..	2	..	..	1	..	2	..	1	..	..	..	..	1	..	1	2	..	1	..	..	..	..	..	..	1	..	..	..	9	..	..	..	..	9	..	1	..	..
12th	..	1	..	..	1	..	..	..	..	3	..	..	1	1	1	..	2	..	1	..	..	..	1	..	..	..	1	..	..	1	7	..	..	..	1	3	..	1	..	1
13th	..	..	3	1	..	..	1	..	3	..	..	..	1	..	1	..	1	..	..	..	1	..	..	..	4	1	..	..	..	1	6	..	..	..	..	2	..	..	..	1
14th	..	2	1	..	2	..	..	..	..	1	..	..	1	1	1	..	2	..	..	..	..	1	..	..	1	1	1	..	..	..	8	..	..	..	..	5	..	..	1	2
15th	..	1	..	3	..	..	3	1	1	..	..	4	5	3	4	..	1	5	..	1	..	1	..	..	3	4	3	1	..	..	24	..	..	1	..	9	..	1	..	.
16th	..	2	1	1	1	..	2	1	..	..	..	3	2	..	1	..	..	..	1	1	..	2	2	..	2	2	..	..	..	1	6	..	1	..	..	3	..	..	..	1
17th	..	1	..	..	2	..	..	1	2	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	1	2	1	1	..	..	6	4	..	..	..	5	1	1	..	2
18th	..	4	5	..	2	..	..	4	1	1	..	3	2	1	2	1	1	1	1	2	2	..	..	..	..	6	..	1	1	..	13	2	..	..	1	3	..	..	..	..
19th	1	2	2	4	3	..	2	1	3	2	..	6	3	1	3	1	2	..	..	1	1	4	..	..	2	2	2	1	..	..	25	2	..	1	4	6	5	1	1	2
20th	..	2	2	3	2	..	1	..	1	1	..	3	2	1	5	4	2	..	1	..	3	..	1	..	1	1	..	2	..	2	12	1	1	..	2	6	..	..	1	2
21st	..	1	..	..	..	..	2	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	1	..	1	1	6	..	..	1	..
22d	..	1	2	..	2	..	1	3	1	2	..	1	2	3	3	..	3	3	3	2	..	..	1	..	..	..	..	1	..	1	5	..	..	..	..	4	1	..	..	1
23d	..	1	2	5	1	..	1	1	..	..	..	..	2	1	1	..	..	..	1	1	..	..	..	..	1	..	1	..	..	..	12	..	..	..	2	6	1	..	..	2
24th	..	3	3	9	1	..	5	2	3	1	..	3	3	1	3	..	1	2	..	..	..	..	2	..	1	..	..	..	..	1	15	3	1	..	3	18	1	..	..	1
25th	..	1	3	4	2	..	1	5	..	1	..	4	..	2	1	1	1	6	1	2	1	1	..	1	3	4	1	3	2	..	18	2	1	1	3	13	..	2	..	1
26th	..	1	3	2	2	..	..	3	2	1	..	2	..	1	..	..	2	2	..	1	..	3	1	..	4	2	2	..	..	2	20	1	5	..	..	26	1	1	..	..
27th	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2	..	..	..	..	1	..	..	..	1	..	5	..	1	..	..	11	..	..	..	..	7	1	..	..	1
28th	..	1	4	1	..	..	1	..	3	1	..	2	2	..	..	..	5	..	1	..	..	..	..	1	..	1	2	1	..	1	11	1	2	..	..	7	..	..	..	..
29th	..	5	4	8	1	..	3	2	4	1	..	3	3	2	..	3	3	1	1	..	..	2	1	..	1	..	4	..	..	3	12	4	2	1	..	11	..	1	1	2
30th	..	..	4	2	..	..	2	1	1	..	..	..	3	1	..	..	..	..	1	1	..	..	1	1	..	2	2	..	..	1	9	..	..	..	2	12	2	1	..	1
31st	..	1	1	4	6	2	..	1	2	1	..	5	..	..	1	2	4	2	..	..	1	2	..	1	..	1	1	..	2	..	10	2	1	2	..	3	..	..	..	1
Total	1	45	52	64	40	3	34	38	34	25	..	54	40	24	32	12	41	30	14	25	10	27	13	8	27	43	31	14	8	22	400	31	18	13	24	240	16	12	7	30

TABLE D—*continued.*

Number of ward.	September.					October.					November.					December.					For the year.					Population, census of 1876.	Area in square miles.
	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.	Cholera inf.	Scarlatina.	Diphtheria.	Croup.	Typh'd fev.		
1st	2	2	1	..	2	1	..	..	3	1	..	2	3	3	..	..	..	2	2	..	52	24	20	19	17	43,085	5.509
2d	1	2	1	..	..	..	..	2	2	2	..	..	..	..	..	..	..	1	1	..	34	23	12	12	10	28,498	.442
3d	4	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	27	8	4	4	4	18,271	.191
4th	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	33	5	5	3	5	18,853	.229
5th	1	..	..	..	..	1	..	3	..	..	..	..	..	1	..	..	..	..	..	..	12	2	5	3	4	16,368	.321
6th	1	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	..	1	5	2	0	2	2	10,004	.321
7th	3	..	..	..	1	1	..	..	1	..	..	..	1	2	1	1	..	..	1	2	53	7	5	11	9	31,087	.439
8th	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	1	19	5	2	3	13	19,545	.435
9th	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	7	1	1	5	6	12,481	.400
10th	1	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	19	5	7	2	6	23,363	.359
11th	2	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	1	2	21	4	8	1	5	12,930	.210
12th	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	11	4	3	3	11	14,690	.193
13th	..	..	..	..	1	..	..	..	..	..	..	1	1	..	1	..	..	..	..	1	10	3	5	4	10	18,646	.259
14th	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	2	1	1	15	7	4	3	9	22,354	.237
15th	5	1	..	..	2	2	1	..	1	5	..	..	1	1	3	..	1	2	..	1	44	16	16	10	19	47,865	1.049
16th	2	..	2	..	1	..	..	..	2	2	1	..	1	1	2	..	..	..	1	..	14	9	10	6	12	17,802	.281
17th	1	..	..	..	1	..	..	1	..	1	..	1	1	1	1	..	..	..	5	1	14	10	5	9	9	20,451	.251
18th	1	1	..	..	1	2	..	5	2	..	..	3	4	6	..	1	1	4	3	3	29	15	26	15	12	29,354	.650
19th	6	5	3	1	2	1	1	..	1	..	1	..	..	2	2	..	2	5	8	2	44	33	16	22	23	43,887	.742
20th	2	..	..	..	1	1	1	1	1	1	..	2	1	1	4	..	4	1	2	..	29	16	11	11	21	43,207	.734
21st	2	..	1	1	1	4	1	3	4	2	..	..	..	4	..	..	..	2	1	..	21	6	6	13	5	19,699	7.129
22d	..	..	..	..	1	..	..	2	..	..	..	..	2	..	..	..	1	1	2	..	9	8	17	9	12	31,798	18.114
23d	1	1	4	..	3	..	..	..	1	2	..	1	2	2	3	..	..	..	2	..	19	6	11	12	16	26,522	42.716
24th	3	..	2	..	1	3	1	1	2	5	..	1	1	3	1	..	1	2	3	3	39	19	19	21	21	46,057	9.725
25th	2	..	1	1	1	..	1	3	..	1	..	..	3	2	1	1	..	2	1	2	40	12	29	15	18	36,104	13.660
26th	6	..	1	1	3	..	1	1	2	3	..	..	1	2	1	..	..	2	3	1	54	13	20	13	18	35,138	7.481
27th	3	..	..	..	1	..	..	2	..	..	..	..	2	1	..	..	..	1	2	1	26	3	6	4	6	23,284	11 680
28th	3	..	..	..	2	3	..	1	1	2	..	..	3	3	3	..	1	1	..	..	25	13	14	10	9	34,442	6.343
29th	2	..	..	..	..	1	1	1	1	3	..	..	3	3	1	..	1	..	1	..	29	26	18	22	12	40,787	1.400
30th	5	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	28	6	10	8	6	29,100	.519
31st	1	..	..	1	..	2	3	..	1	1	..	5	1	2	2	..	2	..	1	2	22	25	6	16	14	31,308	.713
Total	63	12	16	7	28	25	14	27	26	31	3	17	31	42	31	4	14	30	44	29	804	336	321	291	344	846,980	129.379

exceptionally severe in 1878, the mortality was strikingly less, a reduction in the rate from 13 to 3 deaths per ten thousand inhabitants living. I have no special inference to draw from this distribution of the deaths from scarlatina unless it be that its rather laggard steps betray the slow expansive power of the poison; but the degree to which it prevailed in the several sections of the city, as set forth above, will not be without local interest for the dwellers in those localities.

The record gives 321 deaths from *diphtheria*, or a mortality about a third less than in the previous year. In that year the deaths from diphtheria in the last quarter exceeded in number those in the first three months of the year, but in 1879 the reverse was the case, there being only 88 deaths in the last quarter to 130 in the first. The difference is important as regards the year 1880, the diminishing mortality indicating, as in the case of scarlatina, a decline in the disease for that year. The intermediate quarters of the year had, according to the invariable rule, a lessened mortality from diphtheria, the second furnishing 37 and the third 46 deaths.

In the Sixth Ward, where there was comparatively a good deal of diphtheria in 1878, as many as 10 deaths from the disease in a population of 23,363 (census of 1880), there was not a single death due to this cause in 1879, but no other section of the city enjoyed a like immunity. The greatest mortality occurred, on the one hand, in the wards situated along the river Delaware, north from Vine St., including the town of Bridesburg (Eleventh, Sixteenth, Eighteenth and Twenty-fifth wards), where the death-rate from the disease ranged from 5 deaths in each ten thousand in-

habitants living, in the Sixteenth Ward, to 9 in the ten thousand in the Twenty-fifth, exceeding somewhat the number of deaths caused by this zymotic in the same territory in the previous year; and, on the other hand, the inroads of the malady were still grave, though not to the same degree as they had been in the previous year, in that part of the city between the rivers to the south, known as "the neck" (First and Twenty-sixth wards); here the rate was 5 and 6 deaths to the ten thousand inhabitants. Both of these districts are for the most part but little raised above the level of tide-water, and contain a large proportion of the poorer classes of the city. Among the wards containing detached towns, the Twenty-second (Germantown) was responsible for a comparatively large number of deaths (6 per ten thousand inhabitants), but for only half the mortality due to the disease in the previous year; the Twenty-first Ward (Manayunk), in which diphtheria was especially severe in the years 1875 and 1876, and in which the mortality from this cause had diminished in 1878 to 2 deaths in a population of 19,699, gave now 6 victims to the disease; and the Twenty-third Ward (Frankford), with 26,522 inhabitants, had an increase in the number of its deaths, from this zymotic, from 7 to 11.

Season made evident its accustomed influence over the mortality from *croup*, since of the 291 deaths credited to this cause during the year, 121 were recorded in the first quarter, only 30 in the second, with 27 in the third, and as many as 112 in the last quarter of the year. Each of these numbers is less than that for the corresponding period in the previous year, and the whole difference between the annual aggregates

of mortality from this disease equals 97, or a falling off in 1879 of twenty-five per cent.

In the distribution of croup the Twenty-first Ward (Manayunk) suffered the most, with 13 deaths in its population of 19,699. In the rest of the city the mortality varied from 4 or 5 deaths to each ten thousand inhabitants—as in the First, Second, Twenty-sixth, Seventh, Ninth, Seventeenth, Eighteenth, Nineteenth, Thirty-first, Twenty-fifth, Twenty-ninth, Twenty-fourth, and Twenty-Third wards respectively —to 1 or 2 deaths in an equal population, the rate in each of the following wards, the Third, Fourth, Fifth, Sixth, Eighth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth, Twenty-seventh. The municipal divisions in the extreme southern parts of the city, and the northeastern wards, are among those having the highest death-rates from the disease; two central wards are classed with these, also the northern part of the city, west of the Schuylkill River, and the detached town of Frankford. The greater part of the old "city proper," the heart of the municipality, was included among the more favored districts, with the tier of wards directly to the north of this section, and some immediately on the south. It will have been observed that, in a general way, those places most afflicted with croup were the same in which each of the zymotics already spoken of caused the greatest mortality.

The increase over last year in the number of deaths due to *cholera infantum*, already referred to, was 104, the whole number of deaths caused by this disease in 1879 having been 804. The increase was divided among seventeen of the thirty-one wards of the city, but in different proportions; a remarkable augmenta-

tion took place in the Seventh Ward, where as many as 53 infants perished, thrice the mortality of the previous year; besides this ward, the municipal divisions most affected by the increase were those situated south of the old "city proper" (First, Twenty-sixth, Thirtieth, Second, Third, Fourth) and those lying in the northeastern part of the city (Eighteenth, Nineteenth, Twenty-fifth). These are the wards in which other zymotic diseases are wont to reap their fullest harvests, presumably from the richer soil offered through the carelessness and ignorance of a great portion of their inhabitants; but the connection between cholera infantum and unsanitary conditions is less apparent than in the case of the other zymotics, since the Eighth Ward, inhabited by the most opulent of our citizens, has a death-rate from the disease as high as that of either the Nineteenth or the Eighteenth, and exceeding those in the Second, Thirtieth, and several other wards.

Since the year 1876, a steadily declining death-rate of *typhoid fever* has been recorded, till, in 1879, the number of deaths laid at the door of this insidious malady, 344, is the lowest in proportion to population, attained during the twenty years of reliable registration in Philadelphia. Indeed there were only three years during this time in which among fewer inhabitants the zymotic claimed a lower mortality, the years 1861, 1871, and 1872. The decrease from the 404 deaths of the previous year was quite generally distributed over the city, since only six wards out of the thirty-one had increased death-rates from the disease, the more unfortunate wards being the Eighth, Ninth, Twelfth, Thirteenth, Sixteenth, and Twenty-second, in

nearly all of which the mortality was doubled. In only three of these wards, however, the Eighth, Twelfth, and Sixteenth, in which the rate was 7 deaths to each 10,000 inhabitants living, was the mortality above the general rate for the city, which was 4 deaths in an equal population.

The deaths from typhoid fever in this year of lightened mortality were divided among the several quarters of the year in a quite unusual way; 97 occurred in the first quarter, 74 in the secon l, 82 in the third, and 91 in the fourth. Hence the summer maximum, which I have shown in former reports to be a characteristic feature of the mortality from this disease in Philadelphia, disappeared, overwhelmed by the increased number of deaths accruing to the first and last quarters of the year. The diminished summer mortality coincided with a temperature somewhat lower than usual at this season, joined to an excessive rainfall, and followed upon a very cold January and February; while the comparatively high rate of the last quarter was the accompaniment of an opposite condition of things, exceptionally hot weather in October, with deficient precipitation in this month and November. Though efforts are constantly being made to better the sanitary condition of the city, I cannot discover enough improvement to explain thereby the diminution in the mortality from typhoid fever since the year 1876; I have therefore been led to bring forward, as prominently as I have, the meteorological conditions upon which the fortunate change in recent years and last summer seems to have depended.

One of our fellows, Dr. Wm. Pepper, contributed to the Philadelphia Medical Times for January 17,

1880, some notes on a case of mild but true *typhus fever*, which was taken into the Philadelphia Hospital in November, 1879, being the first case of that disease brought there for several years; this case was followed by several others which were received into the house. Besides these, a few more were reported to the Health Office (unpublished records of the Health Office), but in only one instance, in an obscure part of the city, did death result. The disease therefore was not of a severe nature, and had no marked tendency to spread.

A single death from *yellow fever* was recorded in 1879. The victim was one of the crew of a ship which arrived from Cuba on the last day of the quarantine season (September 30), and was permitted to come up to the wharf, the fact that a sailor had died on the voyage of fever having been suppressed, so that no suspicion of infection of any kind had been entertained. The disease showed itself a day or two after the ship's arrival, but, being mistaken for ordinary malarial fever, the patient was removed to a general hospital which happened to be in the very heart of the city. Here he manifested undoubted symptoms of yellow fever, and was removed to a special hospital where he died. Fortunately the hot season had passed, so that notwithstanding the conditions mentioned which might have been favorable to the extension of the disease, no other cases presented themselves.

THOUGHTS UPON VIVISECTION, WITH REFERENCE TO ITS RESTRICTION BY LEGISLATIVE ACTION.

By

GEORGE HAMILTON, M.D.

[Read June 1, 1881.]

The subject which I bring before the College this evening is one that not only interests the profession, but has also engaged the attention of many of the more cultured and sympathizing minds in the community. Popular feeling, it is true, has not been so decided in this country as abroad, notably in England; and this may perhaps be explained by the fact that vivisection in the United States has hitherto been practised only to a limited extent. If the importance of this subject may be estimated by the earnest, vehement language urged in defence of vivisection, or in rebuke and denunciation of it, then may it well be regarded as entitled to no second place in questions pertaining to medical practice. But the subject is, intrinsically, a serious, consequential one, whether in reference to the human or to the brute creation, and demands, for profitable consideration, that it be entered upon in a liberal, ingenuous, and forbearing spirit. Any other than this method of discussing the points involved would not well accord with the professional, social, or intellectual status of those who have been hitherto inclined, or who may now feel disposed, to

take part in the issue before us. It has unfortunately happened that too often intemperance of language or writing, has characterized those who have entered earnestly into the defence of vivisection, or who, on the other side, have condemned it in no measured terms. The peculiarly exceptional nature of this subject may perhaps offer some excuse for the excitement that so generally accompanies its discussion. After all that has been said or written upon the question as to whether vivisection should or should not be suppressed, or restrained within certain limits by legislative action, no definite conclusion has yet resulted; nor, in view of the inherent difficulties of the question, the antagonism upon the subject, and the indisposition to conciliation manifested, does an early solution of the problem seem likely to be secured.

That the advocates of an entire freedom to practise vivisection are laboring under the disadvantage of having, as opponents, men of exalted reputation in medical science and experience, as well as in the social status they occupy, is evident; nor is this all, for very many of the most distinguished of the aristocracy and nobility of England and other countries have protested, in no uncertain terms, against the practice of vivisection—as an outrage upon the brute creation of a degree that finds no justification in a commensurate advance in practical medicine. Now, it cannot reasonably be doubted that the opposition to vivisection was first declared by medical men, who were of course best aware of the scenes enacted at Alfort, and other similar institutions, and through whose influence the distinguished class just alluded to were induced to lend their powerful aid in its prohibition or limitation by

action of the government. These efforts were ardently and persistently resisted by the enthusiastic vivisectionists, and, in some cases, with a sarcasm and bitterness of denunciation that could, at length, only result in loss to the cause they sought to sustain; for it is to be remembered that no motive, other than that of protecting animals from unnecessary torment, could have found place in the hearts of those who, as a class, must be regarded as representatives of a genuine humanity and Christianity.

But in this point of view, may it not sometimes happen that the enthusiastic vivisectionist cannot, as to motives, be so favorably regarded? He is devoted to the investigation of a problem of the most intricate and complex character; one that has baffled for centuries the efforts of all who have attempted the solution of the problem of life, by a successful revelation of the ultimate composition and vital movements of organized matter. In this difficult field of research, in which, in some points, good has been accomplished, and in others, pertaining to practical medicine, so little has been effected, there is room for the ambitious man to enter and, if possible, secure the plaudits awarded to him who has proven to be victorious where so many have been vanquished. But if, as has just been stated, the vivisectionist is confronted in his experiments upon living animals by the opposition of men of the most exalted status, in and out of the profession, he is supported, probably, by an immense majority of the people, whether physicians or not. Of this vast number, it will be found that the uncultured, unthinking, and therefore unfeeling, are in large proportion, and would not be inclined to interpose ob-

jections to the slaughter, or rather torment, of not only a few cats and dogs, but hecatombs of these and other animals, did this sacrifice promise, in ever so slight a degree, a mere alleviation of temporary suffering.

It has been stated by a writer in *Scribner's Magazine*, in an article entitled "Does Vivisection Pay?" that the profession in general supports the practice of vivisection, whilst he candidly intimates that an *esprit de corps* might prevent many practitioners from entering the lists in opposition to it. We are quite convinced that the number of physicians who would object to vivisection, unless restricted by legislative action, is very large, provided that they have attained near to, or passed, the fiftieth year; whilst the younger and less experienced members of the profession would in general support it, until abundant and prolonged clinical experience, more matured judgment, and increased power of observation, should have at length supplanted the too enthusiastic and perhaps too credulous temperament of earlier years.

In regard to the utility of vivisection in its relations to general medical practice, the opinions of practitioners are so diverse and antagonistic, that the public may well regard the whole subject as paradoxical. Nor is it strange that it is viewed in this light, for, on the one hand, it is declared to be so insusceptible of practical application, in the general treatment of disease, as to justify or rather demand its entire prohibition; whilst on the other hand it is announced as the only road to a rational practice. Extreme, conflicting views, such as these, will often find their explanation in an aversion to retract opin-

ions when once positively asserted, or, as in the matter before us, from reason and judgment being often obscured by the influence of mere excitement and feeling.

To declare that there had been no advantage in the treatment of some diseases, as the result of vivisection, would certainly not accord with the views or experience of a large majority of practitioners; while a much larger number of the more experienced and logical members of the profession would not assent to a tithe of the benefits claimed for it by the enthusiastic advocates of vivisection. Any attempt to determine to what extent general medical practice has been improved by experiments upon living animals, would, at the present time, prove as fruitless as embarrassing. The advocates of this practice are by no means in accord upon this point. Strangely enough, the author, before alluded to, declares in his paper that "It is undeniable that to the practice of vivisection we are indebted for nearly all our present knowledge of physiology," and yet, in a subsequent part of his essay, asks, "If painful experiments be requisite even to physiology, why be denounced by the physicians of Oxford and London? If necessary to science, why viewed with abhorrence by the greatest of modern scientists?" In the same excellent paper are cited some of the most eminent experimenters, among them Bernard, Sharpey, Fergusson, Ferrier, Darwin, and the younger Flint, who have, on various occasions, admitted in no dubious terms the extreme difficulty of formulating, from experiments upon living animals, precepts of practical importance in medicine and surgery.

It has recently been stated that only within the past few years have the necessity for, and the benefits to be derived from, vivisection, been duly appreciated by the profession. How then has it come to pass that, just within these years, so many distinguished members of the profession, some of whom had formerly practised vivisection, have so earnestly and importunately protested that its practice should be prohibited, unless the normal physiological state of the animal to be operated upon should first be rendered abnormal by the use of anæsthetics, thus exposing in great measure such experiments to serious objections regarding their practical utility. These noble efforts to protect, in some measure, harmless, unoffending creatures from unnecessary and too often fruitless torment, have, as before intimated, been eagerly seconded, not by the inconsiderate, rollicking part of the British aristocracy, but by that other portion, male and female too, which, it must be admitted, represents nothing less than one of the finest phases of life in its humanity and Christianity. Nor do the signs of the times indicate that these efforts are about to cease. They have been most active at the very time when the finer and more praiseworthy instincts of humanity have been manifested in the organization of societies, and the founding of institutions, for the protection of children and animals from cruelty, and for the prevention or amelioration of suffering of every kind to which man or the brute creation may be exposed.

But how have the modern enthusiastic vivisectionists (those who profess that it is mainly within a few past years that much practical advantage has crowned

their experiments) regarded this earnest crusade against the torment and slaughter of myriads of harmless and defenceless brutes? It is greatly to be feared that, in some cases, it has simply stimulated to resist more earnestly the interference of those whom they designate as having no concern in, nor ability to form a correct opinion of, this subject. And again, there appears to be at the present time a disposition to urge upon practitioners and the public the claims of vivisection to their support, by magnifying the benefits which have accrued to medical science from its practice. With a view to establish this point, it is not unusual to adduce and skilfully detail cases in which success is said to have been only attributable to the investigations of the vivisectionist, while a rigid scrutiny, by an unbiassed mind, would not fail to see that the grounds on which success was predicated were not tenable. But this is not all; for not content with well-devised laudations of the beneficial results vivisection has afforded in certain affections of the nervous system, we are now given to understand, and that too by one deservedly distinguished in this connection, "that the study of disease, by the bedside, has been prosecuted so earnestly, so ably (*sic*), and so long, that it has in great part reached the limit beyond which it, of itself, cannot pass." Whether this, as it seems to the writer, rather hazardous prophetic adventure, may turn out to have been prudently made, time only can determine; yet, as all events and promises in reference to the future are confessedly uncertain, a too confident feeling is not to be indulged. Under any circumstances, the bedside practitioner, the man of experience, need not be discouraged; for,

as we are candidly informed, after centuries of vivisection, in which it is said lie the hopes of medical science, we are now given to understand that vivisection is yet in its infancy; and this opinion, if the subject be regarded in a practical light, is doubtless correct.

It has been asked whether to be "able to warn the wife, who is nursing a consumptive husband, against sleeping in the same bed with him, is a slight gain?" But was not this danger, real or supposed, known to many of the Italian physicians, simply as the result of bedside observation? This source of danger was not alone credited in Italy; it was, and still is, believed by many who know nothing of the claims of the vivisectionist in this direction. More than forty years ago, several families were known to the writer in which deaths from consumption were attributed to this cause. Again, it is declared "that studies upon man alone never have isolated and determined the nature of the poison which produces diphtheria, small-pox, typhoid fever, etc." There is perhaps, in the wide field of medical science and philosophy, no subject so difficult to determine as that of the intimate causation of disease, and in reference to diphtheria and typhoid fever, for example, the practitioners who have had the most frequent and abundant opportunities to observe the origin, development, and progress of these affections, are generally least pronounced in opinion; while admitting the probability of one special poison or cause for these maladies, they do not hesitate to confess their inability to determine what is its nature or mode of action; and many of them incline decidedly to the opinion that these diseases owe their

existence not to one, but to the conjoint operation of several agents. The vivisectionist, then, notwithstanding intimations to the contrary, has determined nothing of a positive character, in elucidation of the actual cause of these maladies.

There is no disposition on the part of the writer to undervalue, or detract from, that which vivisection has accomplished to illustrate normal or abnormal physiology; neither will it be denied that, in certain affections, generally of the nervous system, great benefit has accrued to medical practice, originating directly or indirectly, it matters not, in the experiments of the vivisectionist. On the contrary, he has on various occasions commended, in strong terms, the disagreeable, arduous, and too often perplexing labor inseparable from this difficult subject; and this difficulty is well exemplified in the fact that, after centuries of experiment upon living animals, so limited has been the advantage to general medical practice, that opposition to its unlimited usage is perhaps now more pronounced than ever. To determine the ultimate constitution of organized matter, has been, hitherto, a task only partially accomplished; and yet the difficulty here is insignificant compared with that of revealing molecular action and reaction, as it occurs in the normal condition. This, however, is what the vivisectionist aims at, that a just basis of comparison may be established in reference to abnormal physiology. But, at the present day, he generally does not begin his operation until the animal is thrown into an unnatural condition by the use of agents that destroy nerve power and sensibility to such an extent as to render it in a measure

lifeless; or, if these agents are not employed, the animal is thrown into violent excitement and terror from the torment inflicted by the knife, the chisel, the mallet, or the red-hot iron of the operator.

A most serious objection to accepting, as applicable to the human species, the results of experiments upon animals, is evident in the constitutional diversity and dissimilarity between them, the food of one animal proving poisonous and fatal to another. This obvious and important fact, that neither quibble nor logic can refute, is apt to be overlooked or disregarded in experiments. Very naturally, the investigations of the physiologist are directed almost exclusively to the functions of the brain, the spinal marrow, and the general nervous system; for here, in fact, resides the motive power of the entire organism, just as we see that the movements of the steam-engine are due to the furnace and boiler. Unfortunately for successful experiments upon animals, the nervous system is so exquisitely sensitive, and every portion, from the huge brain to the minutest ramification in the capillary system, so intimately connected and correlated, as to maintain a sympathy so universal, perfect, and surprising in its power, that we may well exclaim: "How fearfully and wonderfully are we made!" The vivisectionist then, *ab initio*, finds himself in difficulty; for violence to one organ will generally throw into commotion other portions of the organism, and this in turn may extend so as to involve every part. Under ordinary circumstances it is impossible to escape embarrassments of this kind, arising, as they do, from the all-pervading and powerful sympathies that bind into one every portion of the system. In view of

these facts, is it strange that so little progress in this direction has been made, that some of the modern vivisectionists declare that investigation by means of vivisection is yet in its infancy! Indeed it seems more strange to hear of the wonderful progress effected during the few past years, with confident assurances that a more decided success will crown the efforts of the near future, "a consummation devoutly to be wished" after an infancy so protracted.

On no one topic, having relation to medicine, have there ever been held opinions so numerous or so discordant, as on the subject before us. It could not well be otherwise. The field to be investigated is vast; hedged in on all sides by obstacles almost or quite insurmountable; traversed by explorers in different and contrary directions, making use of instruments of diverse form, and employing them in different or opposite methods; the investigators differing themselves in the necessary general knowledge and aptitude for the task they have undertaken. What could be expected as the result of such investigations, other than that which, for half a century past, has been given us in numerous volumes, occupied in part, it is true, by statements of value, both in fact and logical deduction, but, as to the greater portion, filled to repletion with tedious records—abounding, in the absence of well-established facts, with conjecture and theory, and containing, at times upon a single page, the opposite conclusions to which four or five investigators have arrived, as the result of their experiments upon the living subject.

The mere want of success in attempts to reveal the mysteries of vital movement, is in itself not ground

for blame; the difficulty lies in the intractable character of these studies. Of this no one seems to have been more convinced than Bernard. He in fact candidly avowed that, in regard to secretion, the entire subject needed revision. This admission, by one so skilful, experienced, and renowned in vivisection, was of the utmost importance, for no one better than he knew the necessity for an infinite amount of knowledge, beyond what is now possessed, of vital organization and action, before the mysteries of nutrition, secretion, and assimilation, could be evolved from the darkness in which they had ever been shrouded, so that some ground of hope might with reason be entertained, that the long expected day of a rational therapeusis was about to dawn upon us, and gladden our vision with its life-inspiring beams. Other experimenters have, from time to time, admitted that vivisection had done more to advance physiology than it had ever contributed to improve general medical practice. The nature of a disease being once determined by vivisection, we are, it is sometimes said, in a position to attempt its cure. This is by no means certain; for all experience shows that some of the maladies which occur most frequently, and which afford the fullest opportunities for, and have repeatedly undergone, thorough examination, are among the most incurable and fatal; so that all that can be claimed, in such cases, is that we are in better position to attempt their treatment.

In this connection let us direct our attention to Germany, that land of steadfast, laborious research in philosophy and science, and eminently so in the prosecution of histological, physiological, and pathological investigation; and with what result in reference

to medical practice? The German, if well educated, is generally not easily convinced in matters pertaining to philosophy or science. He is not so enthusiastic as to rush prematurely to definite conclusions, nor to give his assent to propositions until, after cautious and mature examination, he feels assured that such propositions rest upon a solid basis. After experimenting upon the living, normal organism with earnest, patient assiduity, and to an extent unequalled by any other people, he seems, judging from his expectant, conservative mode of medical practice, to admit that microscopy, chemistry, and physics have hitherto failed to reveal the mysteries of molecular constitution and vital force. He cannot comprehend the subtile processes that, from the same blood, form bone, muscle, nerve, and every other tissue of the body; neither can he better understand how, from the same vital current, are secreted bile, saliva, urine, mucus, pancreatic and other fluids requisite in the functions of the economy. From want of this knowledge, to serve as a basis of comparison with abnormal physiology, he who undertakes to formulate a therapeusis will grope here and there, bewildered in the intricate labyrinth which he has imprudently entered, and will be far more apt to commit errors in practice than he whose guide is found in the more palpable and comprehensible physiology and pathology which are recognized, accepted, and acted upon by an immense majority of the most distinguished writers and practitioners of the present century.

And yet there are those who appear to be apprehensive that the practice of medicine, as now generally pursued, is not likely to make any further progress;

rather in fact to remain stationary. But where is the ground for this surmise, for it appears to be nothing more; is experience to be of no further advantage in the practice of medicine, and has the adage "Practice makes perfect," so suddenly lost its value? Let us advert to the position held by opium as a medicinal agent only fifty years ago. It was even then by far the most useful article of the Materia Medica, and Sydenham, long before, filled with admiration of its unequalled power to remove or moderate pain, declared that it might well be regarded as a gift from Heaven for the alleviation of human suffering, physical or mental. This was the light in which opium was generally regarded until about half a century ago, when its curative powers gradually began to be acknowledged as the result of more extended experience and close observation. At the present moment, and during very many past years, opium, or some of its derivatives, holds, in the opinion of the most able practitioners of medicine and surgery, such a position as a curative agent, applicable to almost innumerable abnormal conditions, that, in comparison, every other article of the Materia Medica dwindles into insignificance.

If there be just reason to suppose that progress in the treatment and cure of disease can no longer be made until based upon a comprehensive knowledge of vital force and its modes of action, then, indeed, it may well be feared that progress in medicine is upon the borders of a stagnation that promises to be of long duration. If the process of growth in a blade of grass cannot be comprehended, with what prospect of success shall man attempt to disclose to view the

mysteries of the vegetable world, as seen in its myriads of form, size, color, and metamorphoses? or how, in passing through the galleries of our Academy of Natural Sciences, will he not gaze with wonder and amazement upon the thousands of objects there displayed, many of them marvels of delicacy or brilliancy in color and form, while others, in their very magnitude and grossness, inspire him with apprehension and aversion! If, then, unable to disclose the hidden operations through which all this is accomplished, how shall the finite power, given by Heaven to man, suffice to reveal the secrets of conception, of resemblance to parents, of growth, of secretion, nutrition, and assimilation?

Objections to vivisection have been made in reference to its alleged immoral character. The sensibility and finer instincts of man, it is asserted, are endangered by frequently witnessing bloody and painful operations upon animals. That the tendency is in this direction, no argument is necessary to prove, for it finds its correlative in the case of vice; seen but once—hated; seen too often—embraced. Too much stress, however, may not be laid upon this charge, otherwise the surgeon, in particular, might be embarrassed or thwarted in his well-directed and merciful efforts for the relief of suffering, or for the reparation of injury. Nevertheless, man, as the lord of creation, is morally bound in regard to the animals under his control; for we are given to know, from Scripture, that the merciful shall obtain mercy, and that the merciful man is merciful to his beast.

The statement has recently been made, that vivisection is practised perhaps more frequently in Pennsyl-

vania than in any other part of the country. When we reflect upon the activity and energy of medical thought in the Northeastern and some of the Western States, it seems almost incredible that such indifference to this practice could exist, unless from incredulity as to its importance in medicine.

From the general tenor of this paper, it might be thought, that strict consistency with the sentiments therein expressed would scarcely justify an approval of vivisection, even when the normal physiological status of the animal had been destroyed previously to operation, or when its practice was by law restricted by the most rigid enactments; but that it should be unconditionally prohibited. The entire subject, however, is yet *sub judice;* and this, if no other reason existed, would warrant, for a time at least, something in the form of concession, both to the vivisector and to the public. The restrictions placed on vivisection by the parliament of England are, as far as we have been informed, greatly approved by the more intelligent and thoughtful portion of the people. This action of the government had in its support among many others the following: Cardinal Manning, Prince Lucien Bonaparte, Alfred Tennyson, Robert Browning, James Anthony Froude, and John Ruskin; the head masters of Rugby, Harrow, and seven other large schools; twenty-one physicians and surgeons; and thirty-seven peers, bishops, and members of Parliament. These distinguished men, with many others of similar sentiments, possessing as they did in position and wealth the means of enjoying life in an eminent degree, would have abstained from opposing the practice of vivisection if they had believed that

health and longevity would have thus been rendered more secure. Yet they felt that, under doubts in regard to a precise estimate of the value of vivisection to mankind, the voice of mercy cried aloud from the horrors of Alfort, and elsewhere; and the nobler instincts of humanity, and the precepts of Christianity, taught them not to disregard the doleful and imploring appeal. In our own country, New York, and, if I am rightly informed, several other States, have enacted stringent laws in regard to vivisection. In our own State, in which is the city of brotherly love—founded by Penn in an observance of the principles of justice, peace, benevolence, love, and mercy, to a degree that the world has seldom witnessed—we are yet without this merciful enactment. Does it not seem eminently proper that the State of Pennsylvania, founded by that man whose humanity and practical Christianity will never disappear from the page of history, and whose figure will, ere long, crown the summit of his monument, the most magnificent of our country, should no longer delay the passage of an act in consonance with the benign and merciful character of its noble and illustrious founder!

After the reading of the preceding paper, Dr. J. C. MORRIS said:—

I regret that my late arrival has prevented my hearing the whole of Dr. Hamilton's interesting and important paper, and also regret finding myself obliged to enter a protest, feeble though it may be, against the acceptance of one of his statements. That vivisection necessarily tends to harden the feelings of those who practise or witness it, to render them callous to the sufferings of the poor victims, is contrary to my own experience. I shall never forget the expression which passed over the face of one of the most distinguished living physiologists and extensive vivisectors, as he remarked, "I am ashamed to look a rabbit in the face." My own experience as a young man was similar. And yet no one can question for a moment the advantage to be gained even by the repetition, before young men, of the old and well-known experiments which reproduce before our eyes the sufferings due to various conditions of disease which we have to treat, thus giving to these young men the advantage of that experience which those of us who are older have gained as we have watched by our patients, on their journey to the bourne whence no traveller returns.

Besides, the same argument as to the witnessing of extensive and bloody operations rendering men callous to suffering, would apply with even more force to practitioners of surgery. Yet who has not seen the shrinking of older surgeons from such operations, which grows with their years and experience? And I need scarcely remind you, sir, of that distinguished surgeon, the late Dr. Physick, who, in his later years, had to be watched during the interval between an operation's being decided upon and the time fixed for its performance, to prevent his absenting himself from the city.

No, sir, the thing which impels the vivisector, as that which impels the surgeon, is the desire to be able better to relieve human suffering. Let us be careful how we discourage either.

INDEX.

Cataract in diabetes mellitus, 67
CHAPMAN, memoir of Dr. J. A. Meigs, cxvii
China, foot-binding in, 1, 63
CLEEMANN, meteorology and epidemics, 29, 79
Convulsions, uræmic, heart-clot from, 19

DA COSTA, starvation fever, 57
Diabetes mellitus, cataract in, 67
DOWNS, memoir of Dr. T. L. Leavitt, cxxxv

Epidemics, report on, 29, 79

Fever, starvation, 57
Foot-binding in China, 1, 63

HAMILTON, vivisection, 103
HARRIS, foot-binding in China, 1, 63
Hays, Dr. Isaac, memoir of, lxxvii
Heart-clot from uræmic convulsions, 19
Heart, tumors of, 19, 27
HUTCHINSON, general hyperostosis, 49
Hyperostosis, general, 49

KIRKBRIDE, memoir of Dr. Isaac Ray, clvii

Leavitt, Dr. T. L., memoir of, cxxxv
LITTELL, memoir of Dr. G. B. Wood, xxv

MEARS, cataract in diabetes mellitus, 67
MEIGS, A. V., heart-clot from uræmic convulsions, etc., 19
Meigs, Dr. J. Aitken, memoir of, cxvii
Meteorology, report on, 29, 79
MORRIS, vivisection, 121

Neill, Dr. John, memoir of, cxli
Ningpo, foot-binding in, 63

Paul, Dr. J. Marshall, memoir of, cxi

Ray, Dr. Isaac, memoir of, clvii
Roberts, tumors of heart, 27

Shippen, memoir of Dr. John Neill, cxli
——— memoir of Dr. J. Marshall Paul, cxi
Starvation fever, 57
Stillé, memoir of Dr. Isaac Hays, lxxvii

Tumors of heart, 19, 27

Uræmic convulsions, heart-clot from, 19

Vivisection, 103, 121

Wood, Dr. George B., memoir of, xxv